In the United States Court of Federal Claims

No. 19-859

(Filed: 22 March 2023)

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E-NUMERATE SOLUTIONS, INC., and        *
E-NUMERATE SOLUTIONS, LLC,             *
                                       *
             Plaintiffs,               *
                                       *   Claim Construction; Markman Hearing;
v.                                     *   Plain and Ordinary Meaning; Intrinsic
                                       *   Record; Person Having Ordinary Skill in the
THE UNITED STATES,                     *   Art.
                                       *
             Defendant.                *
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Shahar Harel, Trial Attorney, Intellectual Property Section, with whom were *Carrie Rosato*, Trial Attorney, *Scott Bolden*, Of Counsel, *Nelson Kuan*, Of Counsel, *Gary L. Hausken*, Director, Commercial Litigation Branch, and *Brian M. Boynton*, Principal Deputy Assistant Attorney General, Civil Division, U.S. Department of Justice, all of Washington, DC, for defendant.

CLAIM CONSTRUCTION OPINION AND ORDER

HOLTE, **Judge.**

Plaintiffs e-Numerate Solutions, Inc. and e-Numerate, LLC[1] accuse the government of patent infringement. The parties filed claim construction briefs seeking to construe the meaning of various disputed claim terms and resolved construction of three terms amongst themselves. The government argues fifteen claim terms are indefinite under 35 U.S.C. § 112 or must be construed under § 112 ¶ 6. While the parties raised numerous terms for construction, the Court's procedures for claim construction, modeled after the rules of Judge Alan Albright of the United States District Court for the Western District of Texas, aided the Court in efficiently handling this claim construction.[2] The Court first held a *Markman* hearing to construe the disputed terms not implicated by the government's indefiniteness arguments, following agreement by the parties

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[1] This court's CM/ECF system, which names plaintiff as "e-Numerate Solutions, LLC," contradicts the parties' briefing, which name plaintiff as "e-Numerate, LLC."

[2] *See also Haddad v. United States*, 164 Fed. Cl. 28 (2023); *Giesecke & Devrient GmbH v. United States*, 163 Fed. Cl. 430 (2023); *Wanker v. United States*, 152 Fed. Cl. 219 (2021); *Thales Visionix, Inc. v. United States*, 150 Fed. Cl. 486 (2020); *CellCast Techs., LLC v. United States*, 150 Fed. Cl. 353 (2020).

at a status conference to split the *Markman* hearing into two days.[3] This Claim Construction Opinion and Order construes the parties' disputed terms not implicating indefiniteness.

I.   Background

A.   Factual History

Plaintiff e-Numerate Solutions, Inc., the owner and assignee of the eight patents-in-suit and plaintiff e-Numerate, LLC (collectively, "plaintiffs" or "e-Numerate"), the exclusive licensee of the seven asserted patents, allege the government infringes the asserted patents. Second Am. Compl. ¶¶ 3–4, ECF No. 53. The asserted patents generally relate to markup languages. U.S. Patent No. 7,650,355 ("the '355 Patent") describes "provid[ing] macros and a markup language . . . which allows numerical analysis routines to be written quickly, cheaply, and in a form that is usable by a broad range of data documents[.]" '355 Patent at [57]. The '355 Patent "facilitates the browsing and manipulation of numbers, as opposed to text as in [Hypertext Markup Language ('HTML')], and does so by requiring attributes describing the meaning of the numbers to be attached to the numbers." *Id.* U.S. Patent Nos. 8,185,816 ("the '816 Patent"), 9,262,383 ("the '383 Patent"), 9,262,384 ("the '384 Patent"), 9,268,748 ("the '748 Patent"), and 10,223,337 ("the '337 Patent") all relate to the same provisional applications as the '355 Patent—"[p]rovisional application No. 60/135,525, filed on May 21, 1999, [and] provisional application No. 60/183,152, filed on Feb. 17, 2000"—and address similar technology. *Id.* at [60]; *see* '816 Patent at [60]; '383 Patent at [60]; '384 Patent at [60]; '748 Patent at [60]; '337 Patent at [60]. U.S. Patent No. 9,600,842 ("the '842 Patent") describes "allow[ing] users to efficiently manipulate, analyze, and transmit eXtensible Business Reporting Language ('XBRL') reports" and "to automatically build financial reports that are acceptable to governing agencies such as the [Internal Revenue Service]." '842 Patent at [57].

Plaintiffs contend the government has assumed liability for various companies which have infringed and continue to infringe the asserted patents through preparing and filing documents with the Securities and Exchange Commission ("SEC"). Second Am. Compl. ¶¶ 51–52, 65–66, 82–83, 99–100, 113–114, 138–139, 152–153. Plaintiffs also argue the SEC directly infringes the '816 and '383 Patents through analysis of infringing submissions. *Id.* ¶¶ 73–74, 90–91. Plaintiffs further assert the SEC, the Federal Deposit Insurance Corporation ("FDIC"), the Federal Financial Institutions Examining Council ("FFIEC"), the United States Department of the Treasury ("Treasury"), the Office of Management and Budget ("OMB"), the Federal Energy Regulatory Commission ("FERC"), and the United States Department of Energy ("DOE") directly infringe the '748 and '842 Patents by validating and processing infringing filings. *Id.* ¶¶ 122–125, 132, 134–136.

B.   Procedural History

Plaintiffs filed their complaint on 11 June 2019. *See* Compl., ECF No. 1. On 11 October

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[3] 7 Oct. 2022 Status Conference Tr. ("SC Tr.") at 101:14–19 ("THE COURT: So the Court hopes to divide the *Markman* hearing into two days with . . . the terms in day one, as much as we can get through them, and then in day two, indefiniteness. Does that make the most sense? [THE GOVERNMENT]: Yes. [PLAINTIFFS]: Yeah."), ECF No. 100.

2019, the government filed a motion to dismiss. *See* Def.'s Mot. to Dismiss under Rule 12(b)(6), ECF No. 8. This case was reassigned to the undersigned Judge on 9 December 2019. *See* Order, ECF No. 11. The Court denied the government's motion to dismiss on 7 August 2020. *See* Op. & Order, ECF No. 27.

Plaintiffs filed their opening claim construction brief, opening claim construction brief on indefiniteness, and an appendix on 14 March 2022. *See* Pls.' Opening Cl. Constr. Br. ("Pls.' Cl. Constr. Br."), ECF No. 78; Pls.' Opening Cl. Constr. Br. on Indefiniteness, ECF No. 79; App. in Supp. of Pls.' Opening Cl. Constr. Brs. ("App."), ECF Nos. 80–81. The government filed its responsive claim construction brief and responsive claim construction brief on indefiniteness on 29 April 2022. *See* Def.'s Resp. Cl. Constr. Br., ECF No. 82; *See* Def.'s Resp. Cl. Constr. Br. on Indefiniteness, ECF No. 83. On 1 June 2022, plaintiffs filed their reply claim construction brief and reply claim construction brief on indefiniteness. *See* Pls.' Reply Cl. Constr. Br., ECF No. 88; Pls.' Reply Cl. Constr. Br. on Indefiniteness, ECF No. 89. The government filed a surreply claim construction brief and a surreply claim construction brief on indefiniteness on 1 July 2022. *See* Def.'s Surreply Cl. Constr. Br., ECF No. 90; Def.'s Surreply Cl. Constr. Br. on Indefiniteness, ECF No. 91. On 15 July 2022, plaintiffs filed a surreply claim construction brief on indefiniteness. *See* Pls.' Surreply Cl. Constr. Br. on Indefiniteness, ECF No. 92. The parties filed their joint claim construction statement on 18 August 2022. See J. Cl. Constr. Statement, ECF No. 95.

The Court held a status conference on 7 October 2022 to discuss the parties' joint claim construction statement, plaintiffs' plans to drop U.S. Patent No. 10,423,708 ("the '708 Patent") from this case following reexamination, technology tutorials the parties submitted to the Court via email, similarities in the specifications of the asserted patents, and logistics for a *Markman* hearing. *See* Order, ECF No. 96; SC Tr. at 6:5–7:5. Following the status conference, the Court issued an order directing the parties to file: (1) the reexamination certificate for the '708 Patent; (2) "[a] stipulation of dismissal with prejudice of Count 8 of the Second Amended Complaint . . . to remove the '708 Patent;" and (3) a revised joint claim construction statement. Order at 1, ECF No. 97. The parties filed their joint stipulation of dismissal and the reexamination certificate on 18 October 2022, *see* J. Stipulation of Dismissal, ECF No. 101, and their revised joint claim construction statement on 20 October 2022, *see* Rev. J. Cl. Constr. Statement Ex. A ("RJCCS"), ECF No. 103-1. The Court held a *Markman* hearing on the disputed terms not implicating indefiniteness on 16 November 2022. *See* Order, ECF No. 98; 16 Nov. 2022 *Markman* Hearing Tr. ("Tr."), ECF No. 106. Following the hearing, the Court allowed the parties to submit supplemental briefing clarifying their arguments. *See* Order, ECF No. 104; Def.'s Suppl. Cl. Constr. Br., ECF No. 107; Pls.' Suppl. Cl. Constr. Br., ECF No. 108.

C.   The Technology of the '355 Patent Family

On 18 May 2000, e-Numerate Solutions, Inc. filed U.S. Patent Application No. 09/573,780, later issued on 19 January 2010 as the '355 Patent. *See* '355 Patent at [10], [21]–[22], [45]. The '355 Patent, titled "Reusable Micro Markup Language," *id.* at [54], relates to "data processing systems and, more particularly, to a computer markup language for use in a data browser and manipulator." *Id.* col. 1 ll. 24–26. "A markup language is a way of embedding markup 'tags,' special sequences of characters, that describe the structure as well as the behavior

of a document and instruct a web browser or other program on how to display the document." *Id.* col. 1 ll. 32–36.

Two examples of markup languages are HTML and Extensible Markup Language ("XML"). *See id.* col. 1 ll. 32, 61–62. HTML contains "a fixed set of tags with specific purposes" mixed with the ordinary text in text files, and "XML is a free-form markup language with unspecified tags, which allows developers to develop their own tags and . . . markup languages." *Id.* col. 1 ll. 39–40, 63–66. The background of the '355 Patent explains limitations of HTML and XML. *See generally* '355 Patent col. 1 ll. 39–59, col. 2 ll. 1–11. HTML's fixed set of tags limits the language to only working with text and images, and HTML only instructs browsers on reading and displaying a document's characters—not understanding the data the browser is displaying. *See id.* col. 1 ll. 39–44. HTML is incapable of interpreting numbers as numbers—it only reads them as text—preventing users from being able to search through numerical data or run it through "an analytical program without human intervention to copy-and-paste." *Id.* col. 1 ll. 44–59. XML falls short in two main areas. First, "XML describes structure and meaning, but not formatting." *Id.* col. 2 ll. 1–2. Second, individualized markup languages the XML users develop from non-standardized tags are incompatible with each other because "different users use the tags for different purposes." *Id.* col. 2 ll. 7–11.

"Methods and systems in accordance with the ['355 Patent] provide a markup language, referred to as Reusable Data Markup Language ("RDML"), that permits the browsing and manipulation of numbers[,] and [these methods and systems] provide a related data viewer that acts as a combination Web browser and spreadsheet/analytic application that may automatically read numbers from multiple online sources and manipulate them without human intervention" to provide a "chart view" display. *Id.* col. 3 ll. 51–58; *see also* '355 Patent col. 3 ll. 58–61, col. 4 ll. 26–28. RDML is capable of making tags reflecting numerical values and their characteristics—such as unit and magnitude—and understanding these numerical characteristics rather than just reading text. *See id.* col. 3 ll. 65–67, col. 4 ll. 4–10.

D.   The Technology of the '816, '383, '384, '748, and '337 Patents

The '355 Patent's technology is representative of the technology claimed in the '816, '383, '384, '748, and '337 Patents because they all relate to the '525 and '152 applications filed on 21 May 1999 and 17 February 2000, respectively. *See* '355 Patent at [60]; '816 Patent at [60]; '383 Patent at [60]; '384 Patent at [60]; '748 Patent at [60]; '337 Patent at [60]; *cf.* SC Tr. at 53:12–17 ("[PLAINTIFFS: [The '525 and '152 applications] were the provisionals that underlie [the '780] application, which issues as the '355 [Patent].")). The '355 Patent was published first. *Compare* '355 Patent at [45], *with* '816 Patent at [45], '383 Patent at [45], '384 Patent at [45], '748 Patent at [45], *and* '337 Patent at [45]. Plaintiffs state "the '355 covers the '816, the '383, the '384, the '748, and the '337," and the '842 is separate from the others as it contains additional disclosure. SC Tr. at 61:1–5; *see also* SC Tr. at 56:6–12 ("THE COURT: . . . [T]he government's responsive claim construction brief stated that all of the asserted patents comprise disclosure substantially similar to the '355 patent, but then goes on to say . . . the '842 . . . patent[] comprise[s] additional disclosure. Do you agree with that? [PLAINTIFFS]: Yes, the '842 patent has additional disclosure than what is in the first series of patents.").

E.   The Technology of the '842 Patent

Unlike the '355 Patent and the related patents, the '842 Patent is representative of a separate patent family. *See* SC Tr. at 61:1–5. On 23 January 2002, plaintiffs filed U.S. Patent Application No. 10/052,250, later issued on 21 March 2017 as the '842 Patent. '842 Patent at [10], [21]–[22], [45]. The '842 Patent is titled "RDX Enhancement of System and Method for Implementing Reusable Data Markup Language (RDL)." *Id.* at [54]. The '842 Patent relates to "data processing systems and, more particularly, to a computer markup language for financial accounting and a related data browser and manipulator." *Id.* col. 1 ll. 39–43. The parties agree there is a substantive difference between the '355 and '842 Patents. SC Tr. at 67:5–11, 67:23–25 ("THE COURT: [T]he '842 Patent, which has an almost identical spec[ification], has priority of January 2001. [THE GOVERNMENT]: Right. THE COURT: Does that result in a substantive difference? [THE GOVERNMENT]: Yes . . . . THE COURT: [Plaintiffs], any disagreement . . . ? [PLAINTIFFS]: . . . The '355 patent and specification and the '842 specification are different."); *see also* SC Tr. at 67:11–20 (the government's explanation of the differences); SC Tr. at 68:5–13 (plaintiffs' explanation of the differences).

Considering markup languages beyond HTML and XML, the '842 Patent incorporates XBRL, "which has an underlying syntax defined in XML." '842 Patent col. 2 ll. 16–18; *see also* SC Tr. at 67:11–20 ("[THE GOVERNMENT]: [T]he '842 includes all the '355, but it includes significantly more . . . it may also incorporate by reference other references beyond the XML Bible, certainly references as to the XBRL standard."). "XBRL is an XML-based language used for reporting financials such as balance sheets, cash flow reports, and the basic information that is reported to the Securities and Exchange Commission ('SEC')." '842 Patent col. 5 ll. 16–19. "XBRL includes two major elements: (1) a 'taxonomy,' which defines the financial terms which can be reported and the interrelationships between these terms, and (2) an 'instance document,' which includes reported values for the terms of the taxonomy and references to the terms." *Id.* col. 2 ll. 24–28. An XBRL "instance document is a report from a financial institution" describing "quantitative values such as the currency (monetary types), precision (e.g., values reported + or –10%), and magnitude (e.g., numbers in thousands, millions, etc.)"; the "XBRL taxonomies form the context" for these reports by defining "the names, data types (e.g., textual, monetary, numeric), and relationships (account/sub-account)" the reports can reference. *Id.* col. 2 ll. 34–50. XBRL lacks, however, the tools for users to build XBRL reports, automatically schedule and transmit reports in XBRL format, automatically link a current accounting system to an XBRL document, or automatically analyze and manipulate data in an XBRL document. *Id.* col. 5 ll. 27–36.

"Methods and systems consistent with the ['842 Patent] provide a data processing system for developing reports," allowing "users to efficiently build, manipulate, analyze and transmit XBRL documents and reports" and "open[ing] analysis possibilities that would normally remain closed to XBRL users." *Id.* col. 5 ll. 42–43, col. 7 ll. 4–6, col. 8 ll. 35–36. In relation with the '355 Patent's RDML, '842 Patent systems and methods allow for "transl[ation] of an XBRL instance document into RDML format for the RDML system to analyze it"; such systems also allow for manipulation of RDML text documents to create instance documents in alternative, non-XBRL formats. *Id.* col. 7 ll. 16–19, col. 8 ll. 12–41.

F.   Overview of Claims

1.   '355 Patent

Plaintiffs assert infringement of 39 claims of the '355 Patent: 1, 2–15, 21, 25–42, 46, and 52–55. Second Am. Compl. ¶ 51. These claims are directed to methods and systems for "provid[ing] macros and a markup language . . . which allows numerical analysis routines to be written quickly, cheaply, and in a form that is usable by a broad range of data documents[.]" '355 Patent at [57]. Asserted claims 2–4, 6–10, 12–15, 21, 25, and 55 depend on claim 1; asserted claim 5 depends on claim 4; asserted claim 11 depends on asserted claim 9; asserted claim 26 depends on asserted claim 25 and ultimately asserted claim 1; asserted claims 29–31, 33–37, 39–42, and 52 depend on asserted claim 28; asserted claim 32 depends on asserted claim 31 and ultimately asserted claim 28; asserted claim 38 depends on asserted claim 36 and ultimately asserted claim 28; asserted claim 46 depends on claim 45 and ultimately asserted claim 28; and asserted claim 53 depends on asserted claim 52 and ultimately asserted claim 28. *Id.* col. 56 l. 34–col. 60 l. 61.

Based on the Court's detailed review of the '355 Patent, the disputed terms not implicating indefiniteness appear in the asserted claims as follows:

Claim Term No.[4]	Disputed Term	Applicable Claims
2	"report"	Claim 21
7	"macro"	Claims 1, 2, 3, 4, 6, 25, 26, 27, 28, 29, 30, 31, 33, 52, 53, 54, 55
8	"tags"[5]	Claims 1, 13, 14, 15, 27, 28, 40, 41, 42, 54
10J	"series of numerical values having tags indicating characteristics of numerical values"	Claims 1, 27, 28, 54
14	"transform the series of numerical values into a new representation of the series of numerical values"	Claims 1, 27, 28, 54
17	"generating at least one second title corresponding to results of the operation"	Claims 1, 28

Claim 1 of the '355 Patent, reproduced below, provides a representative example of five of the disputed claim terms ("macro," "tags," "series of numerical values having tags indicating characteristics of numerical values," "transform the series of numerical values into a new representation of the series of numerical values," and "generating at least one second title

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[4] The Court significantly altered the order of claim terms from the parties' RJCCS to group similar terms together and construe claim terms first which impacted later claim terms. The Court provided its revised numbering of the claim terms to the parties via email before the *Markman* hearing and uses the revised numbering throughout this Claim Construction Opinion and Order.

[5] The government notes in its responsive claim construction brief it no longer seeks a construction of the singular "tag," so the Court construes only the plural, "tags." Def.'s Resp. Cl. Constr. Br. at 13 n.2.

corresponding to results of the operation"). Disputed terms are emphasized:

> 1. A computer-implemented method of processing tagged numerical data, the method comprising:
> receiving a *series of numerical values having tags indicating characteristics of the numerical values*;
> generating at least one first title corresponding to the series of numerical values;
> receiving a *macro* defined to perform an operation on the series of numerical values;
> performing an operation defined by the *macro* on the series of numerical values to *transform the series of numerical values into a new representation of the series of numerical values* based on the *tags*;
> *generating at least one second title corresponding to results of the operation*; and
> displaying the results of the operation and the at least one second title, wherein:
> the *macro* makes a copy of the series of numerical values before the operation is performed,
> the *macro* comprises at least one arithmetic statement, the at least one arithmetic statement comprises a variable, the variable is referenced in a local or remote document other than a document that contains the *macro*, and the step of receiving the *macro* comprises receiving the *macro* including interpreted code, meta-data, and error handling instructions.

Claim 21 of the '355 Patent, reproduced below, provides a representative example of one disputed claim term ("report"). The disputed term is emphasized:

> 21. The computer-implemented method of claim 1, wherein the step of performing comprises the step of adding, to at least one of a chart, a *report* and a graph, at least one of: overlays, datapoint notes, and footnotes.

2. '816 Patent

Plaintiffs assert infringement of 23 claims of the '816 Patent: 1, 3–10, 12–14, and 17–27. Second Am. Compl. ¶¶ 65, 74. These claims are directed to methods and systems for "provid[ing] a computer markup language . . . and a data viewer for retrieving, manipulating and viewing documents and files in the RDML format that may be stored locally or over a network (e.g., the Internet)." '816 Patent at [57]. Asserted claims 3–9 depend on asserted claim 1; asserted claims 12–14 depend on asserted claim 10; and asserted claims 18–25 depend on asserted claim 17. *Id.* col. 55 l. 6–col. 58 l. 41.

Based on the Court's detailed review of the '816 Patent, the disputed terms not implicating indefiniteness appear in the asserted claims as follows:

Claim Term No.	Disputed Term	Applicable Claims
8	"tags"	Claims 1, 3, 4, 5, 6, 7, 8, 9, 10, 17, 19, 20, 21, 22, 23, 24, 25,

		26, 27
9	"characteristic of the numerical value"	Claim 27
10G	"tags reflecting characteristics of the numerical values"	Claims 1, 10, 17, 26, 27
12	"wherein the characteristics indicate that the numerical values of the first markup document differ in format from the numerical values of the second markup document"	Claims 1, 10, 17, 26, 27
13A	"automatically transforming/transforms the numerical values of at least one of the first markup document and the second markup document, so that the numerical values of the first markup document and the second markup document have a common format"	Claims 1, 10, 17, 26, 27

Claim 27 of the '816 Patent, reproduced below, provides a representative example of five disputed claim terms ("tags," "characteristic of the numerical value," "tags reflecting characteristics of the numerical values," "wherein the characteristics indicate that the numerical values of the first markup document differ in format from the numerical values of the second markup document," and "automatically transforming/transforms the numerical values of at least one of the first markup document and the second markup document, so that the numerical values of the first markup document and the second markup document have a common format"). Disputed terms are emphasized:

27. A method in a data processing system, comprising the steps of:
receiving a request for a numerical value, the request indicating at least one *characteristic of the numerical value*;
receiving a first markup document and a second markup document, both the first markup document and the second markup document containing numerical values and *tags reflecting characteristics of the numerical values*, *wherein the characteristics indicate that the numerical values of the first markup document differ in format from the numerical values of the second markup document*, and wherein at least one of the *tags* has the indicated characteristic of the requested numerical value;
automatically transforming the numerical values of at least one of the first markup document and the second markup document, so that the numerical values of the first markup document and the second markup document have a common format;
combining the first markup document and the second markup document into a single data set;
displaying the single data set; and
manipulating the display of the single data set using the *tags* reflecting the characteristics of the numerical values.

3. '383 Patent

Plaintiffs assert infringement of 14 claims of the '383 Patent: 1, 3, 4, 6–12, 14, 15, 17

and 18. Second Am. Compl. ¶¶ 82, 91. These claims are directed to a system, method, and computer program "for identifying a first markup document including first numerical values and first tags reflecting first characteristics of the first numerical values associated with a first unit of measure, and a second markup document including second numerical values and second tags reflecting second characteristics of the second numerical values associated with a second unit of measure." '383 Patent at [57]. Asserted claims 3, 4, 7, and 8 depend on asserted claim 1; asserted claim 6 depends on asserted claim 5 and ultimately on asserted claim 1; asserted claims 9–11 depend on asserted claim 8 and ultimately on asserted claim 1; asserted claim 12 depends on asserted claim 11 and ultimately on asserted claim 1; and asserted claims 14 and 15 depend on asserted claim 13 and ultimately on asserted claim 1. *Id.* col. 143 l. 2–col. 146 l. 46.

Based on the Court's detailed review of the '383 Patent, the disputed terms not implicating indefiniteness appear in the asserted claims as follows:

Claim Term No.	Disputed Term	Applicable Claims
2	"report"	Claim 14
3	"presentation"	Claim 14
4A	"rule"	Claims 9, 10
8	"tags"	Claims 1, 4, 17
10A	"semantic tags"[6]	Claims 1, 6, 7, 8, 11, 12, 15, 17, 18
10H	"first tags reflecting characteristics of the first numerical values"	Claims 1, 4, 17, 18
10I	"second tags reflecting characteristics of the second numerical values"	Claims 1, 4, 17, 18
11	"wherein the first tags and the second tags each include computer-readable semantic tags that describe a semantic meaning of a corresponding one of at least one of the first numerical values or the second numerical values"	Claims 1, 17, 18
13B	"automatic transformation of at least a portion of the first or second numerical values of at least one of the first markup document or the second markup document, so that at least some of the first numerical values of the first markup document and at least some of the second numerical values of the second markup document have a common unit of measure"	Claims 1, 17
15B	"multiple hierarchical relationships between two line items of corresponding numerical values"	Claims 7, 8, 15

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[6] Plaintiffs noted during the 7 October Status Conference the parties no longer dispute the singular form of the term, "semantic tag," so the Court construes only the plural, "semantic tags." SC Tr. at 77:21–22.

16C	"capable of including at least one of: multiple hierarchical relationships between two line items of corresponding numerical values; or computer-readable semantic tags that each describe a semantic meaning of one or more of corresponding numerical values"	Claim 8
16D	"capable of including computer-readable semantic tags that each describe a semantic meaning of one or more of the corresponding numerical values"	Claim 15

Claim 1 of the '383 Patent, reproduced below, provides a representative example of six disputed claim terms ("tags," "semantic tags," "first tags reflecting characteristics of the first numerical values," "second tags reflecting characteristics of the second numerical values," "wherein the first tags and the second tags each include computer-readable semantic tags that describe a semantic meaning of a corresponding one of at least one of the first numerical values or the second numerical values," and "automatic transformation of at least a portion of the first or second numerical values of at least one of the first markup document or the second markup document, so that at least some of the first numerical values of the first markup document and at least some of the second markup document have a common unit of measure"). Disputed terms are emphasized:

1. A computer program product embodied on a non-transitory computer-readable medium comprising:
code for identifying a first markup document including first numerical values and *first tags reflecting* first *characteristics of the first numerical values* associated with a first unit of measure, and a second markup document including second numerical values and *second tags reflecting* second *characteristics of the second numerical values* associated with a second unit of measure, *wherein the first tags and the second tags each include computer-readable semantic tags that describe a semantic meaning of a corresponding one of at least one of the first numerical values or the second numerical values*, via a computer-readable tagging association therebetween, where the first characteristics of the first numerical values associated with the first unit of measure are different from the second characteristics of the second numerical values associated with the second unit of measure;
code for causing *automatic transformation of at least a portion of the first or second numerical values of at least one of the first markup document or the second markup document, so that at least some of the first numerical values of the first markup document and at least some of the second numerical values of the second markup document have a common unit of measure*;
code for processing at least a part of the first markup document and at least a part of the second markup document, resulting in a single markup document; and
code for causing a display of at least a portion of the single markup document.

Claim 8 of the '383 Patent, reproduced below, provides a representative example of three disputed claim terms ("semantic tags," "multiple hierarchical relationships between two line

items of corresponding numerical values," and "capable of including at least one of: multiple hierarchical relationships between two line items of corresponding numerical values; or computer-readable semantic tags that each describe a semantic meaning of one or more of corresponding numerical values"). Disputed terms are emphasized:

> 8.   The computer program product of claim 1, wherein the computer program product is operable such that the single markup document includes a XML-compliant data document that is *capable of including at least one of: multiple hierarchical relationships between two line items of corresponding numerical values, or computer-readable semantic tags that each describe a semantic meaning of one or more of corresponding numerical values*.

Claim 9 of the '383 Patent, reproduced below, provides a representative example of one disputed claim term ("rule"). The disputed term is emphasized:

> 9.   The computer program product of claim 8, wherein the computer program product is configured for utilizing a plurality of computer-readable rules for processing the XML-compliant data document, the computer-readable rules including:
> a computer-readable datatype *rule* for validation of a value type,
> a computer-readable calculation *rule* for validation of a value calculation, and
> a computer-readable unit *rule* for validation of a value unit.

Claim 14 of the '383 Patent, reproduced below, provides a representative example of two disputed claim terms ("report" and "presentation"). Disputed terms are emphasized:

> 14.   The computer program product of claim 13, wherein the computer program product is configured for outputting a *presentation* or *report* that is based on at least a portion of the at least one object, the *presentation* or *report* capable of including at least one of the first numerical values or the second numerical values, including the original value, such that, based on the at least one reference of the at least one object, a change to the original value results in a corresponding change in an instance of the *presentation* or *report*.

Claim 15 of the '383 Patent, reproduced below, provides a representative example of three disputed claim terms ("semantic tags," "multiple hierarchical relationships between two line items of corresponding numerical values," and "capable of including computer-readable semantic tags that each describe a semantic meaning of one or more of the corresponding values"). Disputed terms are emphasized:

> 15.   The computer program product of claim 13, wherein the computer program product is configured such that the single markup document includes a XML-compliant data document that includes *multiple hierarchical relationships between two line items of corresponding numerical values*, and is further *capable of including computer-readable semantic tags that each describe a semantic meaning of one or more of the corresponding numerical values*, wherein the

computer program product is further configured for outputting the XML-compliant data document based on at least a portion of the at least one object, the XML-compliant data document capable of including at least a portion of at least one of the first numerical values or the second numerical values, including the original value, such that, based on the at least one reference of the at least one object, a change to the original value results in a corresponding change in an instance of the XML-compliant data document.

4. '384 Patent

Plaintiffs assert infringement of one claim of the '384 Patent: 66. Second Am. Compl. ¶ 99. This claim is directed to a system, method, and computer program "for use in connection with at least one computer-readable Extensible Markup Language (XML)-compliant data document capable of including: a plurality of line items with a plurality of data values, and a plurality of computer-readable semantic tags that describe a semantic meaning of the data values." '384 Patent at [57].

Based on the Court's detailed review of the '384 Patent, the disputed terms not implicating indefiniteness appear in the asserted claim as follows:

Claim Term No.	Disputed Term	Applicable Claims
2	"report"	Claim 66
3	"presentation"	Claim 66
5	"data values/values"	Claim 66
6	"data structure"	Claim 66
10A	"semantic tags"	Claim 66
10C	"one or more computer-readable semantic tags"	Claim 66

Claim 66 of the '384 Patent, reproduced below, provides a representative example of six disputed claim terms ("report," "presentation," "data values/values," "data structure," "semantic tags," and "one or more computer-readable semantic tags"). Disputed terms are emphasized:

66. A computer program product embodied on at least one non-transitory computer readable medium and configured to cause at least one hardware processor to operate, the computer program product comprising:
code stored on the at least one non-transitory computer readable medium and configured to cause the at least one hardware processor to identify at least parts of a plurality of original documents including a plurality of original *values*, the plurality of original documents including a first document including first *values* and a second document including second *values*:
code stored on the at least one non-transitory computer readable medium and configured to cause the at least one hardware processor to process at least a part of the first document and at least a part of the second document, resulting in at least one *data structure* including at least one of the plurality of original *values* of at least

one of the plurality of original documents:

code stored on the at least one non-transitory computer readable medium and configured to cause the at least one hardware processor to identify one or more indications for one or more of the original *values* for tagging, in connection with at least one computer-readable Extensible Markup Language (XML)-compliant data document, using a corresponding *one or more computer-readable semantic tags*;

code stored on the at least one non-transitory computer readable medium and configured to cause the at least one hardware processor to associate the *one or more computer-readable semantic tags* with the one or more original *values* such that the *one or more computer-readable semantic tags* are computer-readably associated with the one or more original *values*;

code stored on the at least one non-transitory computer readable medium and configured to cause the at least one hardware processor to generate a *presentation* utilizing at least a portion of the at least one *data structure*, the *presentation* capable of including at least a portion of the original *values* including the at least one original value, where the computer program product is configured such that, utilizing the at least one *data structure*, a change to the at least one original value results in a corresponding change in a subsequently generated *presentation*;

code stored on the at least one non-transitory computer readable medium and configured to cause the at least one hardware processor to generate a *report* utilizing at least a portion of the at least one *data structure*, the *report* capable of including at least a portion of the original *values* including the at least one original value, where the computer program product is configured such that, utilizing the at least one *data structure*, a change to the at least one original value results in a corresponding change in a subsequently generated *report*; and

code stored on the at least one non-transitory computer readable medium and configured to cause the at least one hardware processor to generate the computer-readable XML-compliant data document utilizing at least a portion of at least one *data structure*, the at least one computer-readable XML-compliant data document capable of including a plurality of line items at least one of which involves at least a portion of the original *values* including the at least one original value and at least some of the *one or more computer-readable semantic tags*, where the computer program product is configured such that, utilizing the at least one *data structure*, a change to the at least one original value results in a corresponding change in a subsequently generated at least one computer-readable XML-compliant data document.

5.   '748 Patent

Plaintiffs assert infringement of 14 claims of the '748 Patent: 1–5, 10–16, 19, and 20. Second Am. Compl. ¶¶ 113, 122–25. These claims are directed to a system, method, and computer program "for use in connection with at least one computer-readable Extensible Markup Language (XML)-compliant data document capable of including: a plurality of line items with a plurality of data values, and a plurality of computer-readable semantic tags that describe a semantic meaning of the data values." '748 Patent at [57]. Asserted claims 2–5 and 10 depend on asserted claim 1; and asserted claims 12–16 and 20 depend on asserted claim 11. *Id.* col. 141

l. 2–col. 147 l. 24.

Based on the Court's detailed review of the '748 Patent, the disputed terms not implicating indefiniteness appear in the asserted claims as follows:

Claim Term No.	Disputed Term	Applicable Claims
2	"report"	Claims 11, 19, 20
3	"presentation"	Claims 11, 19, 20
4A	"rule"	Claims 1, 12, 13, 14
5	"data values/values"	Claims 1, 2, 4, 11, 12, 13, 14, 15, 19
10A	"semantic tags"	Claims 1, 2, 3, 4, 5, 11, 14, 15, 16, 19, 20
10D	"computer-readable semantic tags that describe a semantic meaning of the data values"	Claim 1
10E	"computer-readable semantic tags that describe a semantic meaning of the data values and are each computer-readably coupled to at least one of the data values/the at least portion of the original values"[7]	Claims 1
15A	"multiple hierarchical relationships between two line items"	Claim 1
16A	"capable of including multiple hierarchical relationships between two line items"	Claim 1

Claim 1 of the '748 Patent, reproduced below, provides a representative example of seven disputed claim terms ("rule," "data values/values," "semantic tags," "computer-readable semantic tags that describe a semantic meaning of the data values," "computer-readable semantic tags that describe a semantic meaning of the data values and are each computer-readably coupled to at least one of the data values/the at least portion of the original values," "multiple hierarchical relationships between two line items," and "capable of including multiple hierarchical relationships between two line items"). Disputed terms are emphasized:

> 1. An apparatus, comprising:
> a device; and
> an application including a network browser on the device for accessing a system configured for:
> identification of at least one computer-readable Extensible Markup Language (XML)-compliant data document including:
> a plurality of line items with a plurality of *data values*,

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[7] The Court notes the original language submitted by the parties after the slash did not correspond to a term in the claims cited. The parties agreed at oral argument the Court corrects the typo by substituting the phrase "the at least portion of the original values." Tr. at 150:16–24 ("THE COURT: . . . would you assume the Court is correct in correcting it so it does not end in 'computer-readable semantic tags'? [PLAINTIFFS]: Yes. . . . [THE GOVERNMENT]: Yeah.").

and

a plurality of *computer-readable semantic tags that describe a semantic meaning of the data values and are each computer-readably coupled to at least one of the data values*, where the at least one computer-readable XML-compliant data document is *capable of including multiple hierarchical relationships between two line items*;

parsing of the at least one computer-readable XML-compliant data document;

accessing a plurality of computer-readable rules including:

a computer-readable datatype *rule* for validation of a type of *data values*,

a computer-readable calculation *rule* for validation of a calculation involving *data values*, and

a computer-readable unit *rule* for validation of a unit of *data values*;

validation of the at least one computer-readable XML-compliant data document by:

identifying at least a subset of the computer-readable rules including at least one of:

the computer-readable datatype *rule* for validation of the type of *data values*,

the computer-readable calculation *rule* for validation of the calculation involving *data values*, or

the computer-readable unit *rule* for validation of the unit of *data values*;

processing at least a portion of the *data values* of at least a portion of the line items of the at least one computer-readable XML-compliant data document, utilizing the at least subset of the computer-readable rules and at least a portion of the computer-readable *sematic [sic] tags* of the at least one computer-readable XML-compliant data document;

said apparatus configured for:

accessing at least a portion of the at least one computer-readable XML-compliant data document utilizing the application including the network browser.

Claim 20 of the '748 Patent, reproduced below, provides a representative example of three disputed claim terms ("report," "presentation," and "semantic tags"). Disputed terms are emphasized:

20. The computer program product of claim 11, wherein the computer program product is configured such that at least one of:

said at least portion of the original *values* of the at least one computer-readable XML-compliant data document include different instances of the same values as the corresponding original *values* of the at least one original document;

said at least portion of the original *values* of the at least one computer-readable XML-compliant data document include different instances of the same values as the corresponding original *values* of the at least one object;

said at least some of the computer-readable *semantic tags* are each computer-readably coupled to the at least one original value of the at least one object;

said at least some of the computer-readable *semantic tags* are each computer-readably coupled to the at least portion of the original *values* of the *presentation*;

said at least some of the computer-readable *semantic tags* are each computer-readably coupled to the at least portion of the original *values* of the *report*;

said at least some of the computer-readable *semantic tags* are each computer-readably coupled to the at least portion of the original *values* of the at least one computer-readable XML-compliant data document;

said at least some of the computer-readable *semantic tags* are each computer-readably coupled to the at least portion of the original *values*, utilizing computer-readable code elements;

said at least some of the computer-readable *semantic tags* are each computer-readably coupled to the at least portion of the original *values*, utilizing computer-readable code elements including at least one of a computer-readable *semantic tag* equal sign, a computer-readable *semantic tag* quotation, or computer-readable *semantic tag* bracket;

said receipt of the user selection of the one or more of the original *values* is received in connection with the at least one original document;

said receipt of the user selection of the one or more of the original *values* is received in connection with the at least one object;

said receipt of the user selection of the one or more of the original *values* is received in connection with the *presentation*;

said receipt of the user selection of the one or more of the original *values* is received in connection with the *report*;

said receipt of the user selection of the one or more of the original *values* is received in connection with the at least one computer-readable XML-compliant data document;

said mapping includes an association;

said at least some of the computer-readable *semantic tags* includes all of the one or more of the computer-readable *semantic tags* subject to the mapping;

said at least one object includes at least one of metadata, information, a component of a formatter, a storage object, or a database;

said at least portion of the original *values* includes only the at least one original value;

said at least one computer-readable XML-compliant data document includes a reusable data markup language (RDML) document;

said line items are associated with a record, row, table, or other entity of a relational database;

said *presentation*, the *report*, and the at least one computer-readable XML-compliant data document include the same at least portion of the original *values*;

said *presentation*, the *report*, and the at least one computer-readable XML-compliant data document include the same at least one original value;

said *presentation*, the *report*, and the at least one computer-readable XML-compliant compliant data document are based on the same at least portion of the at least one object;

said at least one computer-readable XML-compliant data document is based on the at least portion of the at least one object by including the at least portion of the at

least one object;

said at least one computer-readable XML-compliant data document is based on the at least portion of the at least one object by being generated utilizing the at least portion of the at least one object;

said at least one computer-readable XML-compliant data document is based on the at least portion of the mapping by including the at least some of the computer-readable *semantic tags*;

said at least some of the computer-readable *semantic tags* are included in the line items;

said change to the at least one original value of the at least one original document is capable of being made in the at least one original document;

said corresponding change in the instance of the at least one computer-readable XML-compliant data document includes a change to an instance of the at least one original value in the at least one computer-readable XML-compliant data document;

said instance of the at least one computer-readable XML-compliant data document is subsequent to the change to the at least one original value of the at least one original document; or

said computer-readable *semantic tags* are applied to the line items.

6.   '337 Patent

Plaintiffs assert infringement of one claim of the '337 Patent: 1. Second Am. Compl. ¶ 152. This claim is directed to a system, method, and computer program product "for use in connection with at least one computer-readable Extensible Markup Language (XML)-compliant data document capable of including: a plurality offline [sic] items with a plurality of data values, and a plurality of computer-readable semantic tags that describe a semantic meaning of the data values." '337 Patent at [57].

Based on the Court's detailed review of the '337 Patent, the disputed terms not implicating indefiniteness appear in the asserted claim as follows:

Claim Term No.	Disputed Term	Applicable Claims
1	"markup language"	Claim 1
2	"report"	Claim 1
3	"presentation"	Claim 1
5	"data values/values"	Claim 1
10A	"semantic tags"	Claim 1
10B	"computer-readable semantic tags"	Claim 1

Claim 1 of the '748 Patent, reproduced below, provides a representative example of six disputed claim terms ("markup language," "report," "presentation," "data values/values," "semantic tags," and "computer-readable semantic tags"). Disputed terms are emphasized:

1. A computer program product embodied on a non-transitory computer readable

medium and configured to be executed by a system including at least one hardware processor, the computer program product comprising instructions for:

storing a plurality of original documents including a plurality of original *values*, including a first document including first *values* and a second document including second *values*;

processing at least a part of the first document and at least a part of the second document, resulting in at least one object including at least one reference to at least one of the plurality of original *values* of at least one of the plurality of original documents;

receiving a user selection of one or more *computer-readable semantic tags*;

receiving a user selection of one or more of the original *values*;

mapping the one or more of the *computer-readable semantic tags* to the one or more of the original *values*;

outputting a *presentation* that is based on at least a portion of the at least one object, the *presentation* capable of including at least a portion of the original *values* including the at least one original value, where the system is configured to execute the instructions such that, based on the at least one reference of the at least one object to the at least one original value of the at least one original document, a change to the at least one original value of the at least one original document results in a corresponding change in a subsequent instance of the *presentation*;

outputting a *report* that is based on at least a portion of the at least one object, the *report* capable of including at least a portion of the original *values* including the at least one original value, where the system is configured to execute the instructions such that, based on the at least one reference of the at least one object to the at least one original value of the at least one original document, a change to the at least one original value of the at least one original document results in a corresponding change in a subsequent instance of the *report*; and

outputting at least one computer-readable Extensible Markup Language (XML)-compliant data document that is produced using a *markup language* that extends XML for reporting and that is not XML, Hypertext Markup Languange [sic] (HTML), Extensible Style Language (XSL), nor Standard Generalized Markup Language (SGML) and that is based on at least a portion of the at least one object and at least a portion of the mapping, the at least one computer-readable XML-compliant data document capable of including a plurality of line items with at least a portion of the original *values* including the at least one original value and at least some of the *computer-readable semantic tags*, where the system is configured to execute the instructions such that, based on the at least one reference of the at least one object to the at least one original value of the at least one original document, a change to the at least one original value of the at least one original document results in a corresponding change in a subsequent instance of the at least one computer-readable XML-compliant data document.

7. '842 Patent

Plaintiffs assert infringement of one claim of the '842 Patent: 29. Second Am. Compl. ¶¶ 132, 134–36, 138. This claim is directed to methods and systems to "allow users to efficiently

manipulate, analyze, and transmit eXtensible Business Reporting Language ('XBRL') reports."
'842 Patent at [57].

Based on the Court's detailed review of the '842 Patent, the disputed terms not implicating indefiniteness appear in the asserted claim as follows:

Claim Term No.	Disputed Term	Applicable Claims
2	"report"	Claim 29
4B	"rule"	Claim 29
5	"data values/values"	Claim 29
10A	"semantic tags"	Claim 29
10F	"plurality of computer-readable semantic tags that describe a semantic meaning of the data values"	Claim 29
15C	"multiple hierarchical relationships between two of the plurality of line items"	Claim 29
16B	"capable of including multiple hierarchical relationships between two of the plurality of line items"	Claim 29

Claim 29 of the '842 Patent, reproduced below, provides a representative example of seven disputed claim terms ("report," "rule," "data values/values," "semantic tags," "plurality of computer-readable semantic tags that describe a semantic meaning of the data values," "multiple hierarchical relationships between two of the plurality of line items," and "capable of including multiple hierarchical relationships between two of the plurality of line items"). Disputed terms are emphasized:

> 29. A computer program product embodied on at least one non-transitory computer readable medium and configured to cause at least one hardware processor to operate, the computer program product comprising:
> code stored on the at least one non-transitory computer readable medium and configured to cause the at least one hardware processor to identify at least one computer-readable Extensible Markup Language (XML)-compliant data document that is eXtensible Business Reporting Language (XBRL)-compliant and includes:
> a plurality of line items with a plurality of *data values*, and
> *a plurality of computer-readable semantic tags that describe a semantic meaning of the data values*, where the at least one computer-readable XML-compliant data document is *capable of including multiple hierarchical relationships between two of the plurality of line items*;
> code stored on the at least one non-transitory computer readable medium and configured to cause the at least one hardware processor to parse the at least one computer-readable XML-compliant data document, by:
> receiving the at least one computer-readable XML-compliant data document,
> identifying the multiple hierarchical relationships between the two line items, and
> at least one of the computer-readable *semantic tags* that describes the semantic

meaning of at least one of the *data values* included in the at least one computer-readable XML-compliant data document;

code stored on the at least one non-transitory computer readable medium and configured to cause the at least one hardware processor to access a plurality of computer-readable rules including:

a computer-readable datatype *rule* for validation of a type of *data values*,

a computer-readable calculation *rule* for validation of a calculation involving *data values*, and

a computer-readable unit *rule* for validation of a unit of *data values*;

code stored on the at least one non-transitory computer readable medium and configured to cause the at least one hardware processor to process the at least one computer-readable XML-compliant data document, by:

identifying at least a subset of the computer-readable rules including at least one of:

the computer-readable datatype *rule* for validation of the type of *data values*,

the computer-readable calculation *rule* for validation of the calculation involving *data values*, or

the computer-readable unit *rule* for validation of the unit of *data values*; and

processing at least a portion of the *data values* of at least a portion of the plurality of line items of the at least one computer-readable XML-compliant data document, utilizing the at least subset of the computer-readable rules, and at least a portion of the computer-readable *semantic tags* of the at least one computer-readable XML-compliant data document;

code stored on the at least one non-transitory computer readable medium and configured to cause the at least one hardware processor to display a result of a validation of the at least one computer-readable XML-compliant data document;

code stored on the at least one non-transitory computer readable medium and configured to cause the at least one hardware processor to develop a *report*, by:

identifying the at least one computer-readable *semantic tag* that describes the semantic meaning of the at least one data value included in the at least one computer-readable XML-compliant data document, and

retrieving data from one or more sources to represent the at least one data value in the *report*.

II.   Applicable Law for Claim Construction

A.   Claim Term Interpretation

"[T]he interpretation and construction of patent claims, which define the scope of the patentee's rights under the patent, is a matter of law exclusively for the court." *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 970–71 (Fed. Cir. 1995), *aff'd*, 517 U.S. 370 (1996). "[T]he words of a claim 'are generally given their ordinary and customary meaning' . . . . [which] is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention . . . ." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). "There are only two exceptions to this general rule: 1) when a patentee sets out a

definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution." *Thorner v. Sony Comput. Ent. Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012) (citing *Vitronics*, 90 F.3d at 1580).

The analysis of any disputed claim terms begins with the intrinsic evidence of record, as "intrinsic evidence is the most significant source of the legally operative meaning of disputed claim language." *Vitronics*, 90 F.3d at 1582. Additional claims, whether asserted or not, "can also be valuable sources of enlightenment as to the meaning of a claim term." *Phillips*, 415 F.3d at 1314. This includes consistent use throughout the patent, differences amongst particular terms, and various limitations added throughout the dependent claims. *Id.* at 1314–15. The claims do not stand on their own; "they are part of 'a fully integrated written instrument,' consisting principally of a specification that concludes with the claims." *Id.* at 1315 (quoting *Markman*, 52 F.3d at 978). The claims are therefore "read in view of the specification[.]" *Markman*, 52 F.3d at 979. It is important limitations from preferred embodiments are not read "into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited." *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004).

The Federal Circuit's caselaw "instructs that different claim terms are presumed to have different meanings." *MicroStrategy Inc. v. Bus. Objects Ams.*, 238 F. App'x 605, 609 (Fed. Cir. 2007) (citing *CAE Screenplates Inc. v. Heinrich Fiedler GmbH & Co. KG*, 224 F.3d 1308, 1317 (Fed. Cir. 2000) ("In the absence of any evidence to the contrary, we must presume that the use of these different terms in the claims connotes different meanings."); *Applied Med. Res. Corp. v. U.S. Surgical Corp.*, 448 F.3d 1324, 1333 n.3 (Fed. Cir. 2006) ("[T]he use of two terms in a claim requires that they connote different meanings . . . .")). The Federal Circuit, however, "ordinarily interpret[s] claims consistently across patents having the same specification[.]" *In re Katz Interactive Call Processing Pat. Litig.*, 639 F.3d 1303, 1325 (Fed. Cir. 2011); *see also Callicrate v. Wadsworth Mfg., Inc.*, 427 F.3d 1361, 1369 (Fed. Cir. 2005) (applying construction of term based on first patent to same term of different patent where the two patents were related and had identical specifications).

B. **Prosecution History Weight and Interpretation**

The prosecution history may serve as an additional source of intrinsic evidence. *Markman*, 52 F.3d at 979–80. The prosecution history "consists of the complete record of the proceedings before the [United States Patent and Trademark Office ('USPTO')] and includes the prior art cited during the examination of the patent." *Phillips*, 415 F.3d at 1317. The prosecution history "represents an ongoing negotiation between the [US]PTO and the applicant, rather than the final product of that negotiation[.]" *Id.* The prosecution history therefore often "lacks the clarity of the specification[,]" making it "less useful for claim construction purposes." *Id.* After considering all intrinsic evidence of record, the court has discretion to consider sources of extrinsic evidence, such as dictionaries, treatises, and expert and inventor testimony, if the court "deems it helpful in determining 'the true meaning of language used in the patent claims.'" *Id.* at 1317–18 (quoting *Markman*, 52 F.3d at 980). While sometimes helpful, extrinsic evidence is "less significant than the intrinsic record in determining 'the legally operative meaning of claim language.'" *Id.* at 1317 (quoting *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 862

(Fed. Cir. 2004)).

"Prosecution disclaimer 'preclud[es] patentees from recapturing through claim interpretation specific meanings disclaimed during prosecution.'" *Aylus Networks, Inc. v. Apple Inc.*, 856 F.3d 1353, 1359 (Fed. Cir. 2017) (quoting *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003)). Federal Circuit caselaw "requires that the alleged disavowing actions or statements made during prosecution be both clear and unmistakable" to apply the principles of prosecution disclaimer. *Id.* (internal quotations omitted) (quoting *Omega Eng'g*, 334 F.3d at 1325–26). "[W]hen the patentee unequivocally and unambiguously disavows a certain meaning to obtain a patent, the doctrine of prosecution history disclaimer narrows the meaning of the claim consistent with the scope of the claim surrendered." *Biogen Idec, Inc. v. GlaxoSmithKline LLC*, 713 F.3d 1090, 1095 (Fed. Cir. 2013). Further, "statements made by a patent owner during an [inter partes review] proceeding can be considered during claim construction and relied upon to support a finding of prosecution disclaimer." *Aylus*, 856 F.3d at 1361. "Where the alleged disavowal is ambiguous, or even 'amenable to multiple reasonable interpretations,'" however, the Federal Circuit has "declined to find prosecution disclaimer." *Avid Tech., Inc. v. Harmonic, Inc.*, 812 F.3d 1040, 1045 (Fed. Cir. 2016) (quoting *Cordis Corp. v. Medtronic AVE, Inc.*, 339 F.3d 1352, 1359 (Fed. Cir. 2003)).

In *Iridescent Networks, Inc. v. AT&T Mobility, LLC*, the district court construed the term "high quality of service connection," partially relying on the patentee's own statements during prosecution of the parent application. 933 F.3d 1345, 1349–50 (Fed. Cir. 2019). On appeal, plaintiff contended "the prosecution history is irrelevant to the claim construction question because there is no clear and unmistakable disavowal of claim scope." *Id.* at 1352. The Federal Circuit rejected this argument, stating, "[A]ny explanation, elaboration, or qualification presented by the inventor during patent examination is relevant, for the role of claim construction is to capture the scope of the actual invention that is disclosed, described, and patented." *Id.* at 1352–53 (internal quotations omitted) (quoting *Fenner Invs., Ltd. v. Cellco P'ship*, 778 F.3d 1320, 1323 (Fed. Cir. 2015)). The Federal Circuit also noted "the disputed term ['high quality of service connection'] is a coined term, meaning it has no ordinary and customary meaning[.]" *Id.* at 1353. The Federal Circuit held courts "may look to the prosecution history for guidance without having to first find a clear and unmistakable disavowal" for terms which do not have ordinary and customary meaning. *Id.*

III.   Disputed Claim Term #1: "markup language"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
A markup language is a computer language that uses tags to define elements within a document. It is human-readable, meaning markup files contain standard words, rather than typical programming syntax. Examples of markup languages include HTML, XML and XBRL.	A markup language is a language that uses tags to define elements within a document. Examples of markup languages include HTML, XML and XBRL.

Plaintiffs dispute the construction of this claim term in claim 1 of the '337 Patent.

RJCCS at 74–75.

The following claim limitation highlights selected usage of the term in context:

> outputting at least one computer-readable Extensible Markup Language (XML)-compliant data document that is produced using a *markup language* that extends XML for reporting and that is not XML, Hypertext Markup Languange [sic] (HTML), Extensible Style Language (XSL), nor Standard Generalized Markup Language (SGML) . . . .

'337 Patent col. 111 ll. 53–59 (emphasis added).

A.   Parties' Arguments

Plaintiffs base their construction on a definition they put forward as representing the "well-understood meaning in the art." Pls.' Cl. Constr. Br. at 42 (citing Per Christensson, *Markup Language*, TechTerms.com (June 1, 2011), https://techterms.com/definition/markup_language ("A markup language is a computer language that uses tags to define elements within a document. It is human-readable, meaning markup files contain standard words, rather than typical programming syntax. While several markup languages exist, the two most popular are HTML and XML.")). The government objects to plaintiffs' insertion of "computer language" because "a 'computer language' typically implies a computer programming language which markup languages are not." Def.'s Resp. Cl. Constr. Br. at 43. Further, the government argues the second sentence of plaintiffs' construction "raises questions as to what 'standard words' and 'typical programming syntax' constitute." *Id.* Rather than the modern website used by plaintiffs, the government argues, a contemporary dictionary is appropriate extrinsic evidence. *Id.* at 44 (citing *Markup Language*, Microsoft Computer Dictionary (4th ed. 1999) ("A set of codes in a text file that instruct a computer how to format it on a printer or video display or how to index and link its contents. Examples of markup languages are Hypertext Markup Language (HTML) and Extensible Markup Language (XML), which are used in Web pages, and Standard Generalized Markup Language (SGML), which is used for typesetting and desktop publishing purposes and in electronic documents. Markup languages of this sort are designed to enable documents and other files to be platform-independent and highly portable between applications.")).

Plaintiffs object to any attempt by the government to use the declaration of Dr. David Martin in support of its proposed construction. Pls.' Cl. Constr. Br. at 43 (citing Decl. of Dr. David Martin in Supp. of Def.'s Proposed Prelim. Cl. Constrs. ("Martin Decl.") ¶¶ 48–49, ECF No. 69-5). The government, however, does not cite the Martin declaration in its briefing on this term. *See* Def.'s Resp. Cl. Constr. Br. at 42–43; Def.'s Surreply Cl. Constr. Br. at 20. The government further stated at the *Markman* hearing, "The primary argument is based on the written record of the patent. [The Martin declaration] is supplemental testimony . . . ." Tr. at 12:5–8.

B.   Analysis

1. The Court's Preliminary Construction

Before the *Markman* hearing, the Court considered the parties' claim construction briefs and all referenced materials in full in reaching a preliminary construction for this disputed term. Reviewing the intrinsic record first, the Court found the government's construction to be well supported, with slight modifications. Extrinsic evidence further bolstered the government's construction. As such, the Court decided upon the following preliminary construction: "Plain and ordinary meaning. Insofar as a definition is required: A language that uses tags to define elements within a document. Examples of markup languages include Hypertext Markup Language (HTML), Extensible Markup Language (XML), and Standard Generalized Markup Language (SGML), and Extensible Business Reporting Language (XBRL) (after 31 July 2000)."

2. The Court's Final Construction

At the *Markman* hearing, the Court provided the parties with the Court's preliminary construction. Tr. at 15:15–24. Both parties agreed with the Court "adding SGML as an example and limiting XBRL by the date of publication of the first specification." Tr. at 17:8–13 (plaintiffs), 17–19 (the government). The government suggested the Court clarify HTML, XML, and SGML predate 21 May 1999, the priority date claimed for all asserted patents except the '842 Patent, and plaintiffs agreed.[8] Tr. at 17:19–18:22 (the government), 18:24–19:5 (plaintiffs). The Court accordingly alters the second sentence of its preliminary construction to read: "Examples of markup languages that existed as of 21 May 1999 include Hypertext Markup Language (HTML), Extensible Markup Language (XML), and Standard Generalized Markup Language (SGML). Extensible Reporting Business Language (XBRL) is an example after 31 July 2000."

During the *Markman* hearing, the parties came to agreement on the phrase "nonprogramming computer language" to resolve their dispute regarding plaintiffs' argument in favor of "computer language" in the first sentence of the Court's preliminary construction. Tr. at 104:10–19. The Court accordingly alters the first sentence of its preliminary construction to read: "A nonprogramming computer language."

Plaintiffs maintained markup languages are human-readable (as stated in their proposed construction), citing the examples in the appendices for support. Tr. at 22:24–23:5. When asked about attributes such as "li_mag" and "li_mod," '355 Patent col. 20 ll. 37–38,[9] however, plaintiffs admitted they were "abbreviations or shorthand" rather than words from

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[8] Plaintiffs clarified they do not concede XBRL "was a known market language as of July 31st, 2000"—the publication date of the first specification. Tr. at 26:18–27:4; Karen Kernan, *The Story of Our New Language* 17 (2009) ("On July 31, 2000, XBRL International published the XBRL 1.0 specification and a taxonomy (a list of terms and associated computer code) defining 1,880 concepts for financial reporting of commercial and industrial companies under U.S. GAAP.").

[9] As agreed by the parties during the 7 October Status Conference, the Court primarily uses the '355 specification—plus the appendices which were included in the application for the '355 Patent but not issued with the patent as part of a printing error—for construction of terms from all asserted patents except the '842 Patent because all but the '842 Patent have highly similar specifications. SC Tr. at 55:4–59:3 ("THE COURT: . . . [D]oes the '355 Patent with the appendices that were part of the . . . '780 application cover [the disputed claim terms] then? [PLAINTIFFS]: It should. . . . [THE GOVERNMENT]: Yeah, that's our understanding.").

"conversational English." Tr. at 23:14–24:16 ("[PLAINTIFFS]: They're readable by somebody . . . I hate to say they're standard words, like conversational English, because they're not. . . . [T]hey're abbreviations or shorthand for different numerical concepts."). The government contended whether or not a markup language is human-readable "depends on the specific implementation"—an attribute could be written as "line item magnitude," "li_mag," or "xyz." Tr. at 24:18–25. The parties did not agree on whether markup languages are human-readable, so the Court must determine whether the proposed limitation is supported by the specification. *See* Tr. at 26:13–18. As plaintiffs cannot provide any specific support from the specification or claim language for the "human-readable" limitation, and the examples contain more than only "standard words," the Court does not add the "human-readable" limitation to its final construction. *See* Tr. at 22:24–24:16 (failing to provide support from the specification).

Implementing modifications based on the specification evidence and agreement between the parties, the Court alters its preliminary construction and adopts the following final construction: "Plain and ordinary meaning. Insofar as a definition is needed: A nonprogramming computer language using tags to define elements within a document. Examples of markup languages that existed as of 21 May 1999 include Hypertext Markup Language (HTML), Extensible Markup Language (XML), and Standard Generalized Markup Language (SGML). Extensible Reporting Business Language (XBRL) is an example after 31 July 2000." *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
A markup language is a computer language that uses tags to define elements within a document. It is human-readable, meaning markup files contain standard words, rather than typical programming syntax. Examples of markup languages include HTML, XML and XBRL.	A markup language is a language that uses tags to define elements within a document. Examples of markup languages include HTML, XML and XBRL.
Court's Final Construction	
Plain and ordinary meaning. Insofar as a definition is needed: **A nonprogramming computer language using tags to define elements within a document. Examples of markup languages that existed as of 21 May 1999 include Hypertext Markup Language (HTML), Extensible Markup Language (XML), and Standard Generalized Markup Language (SGML). Extensible Reporting Business Language (XBRL) is an example after 31 July 2000.**	

IV.   Disputed Claim Term #2: "report"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Plain and ordinary meaning.	Document generated by combining an XML-compliant document with a template.

The government disputes the construction of this claim term in the following claims:

claim 21 of the '355 Patent; claim 14 of the '383 Patent; claim 66 of the '384 Patent; claims 11, 19, and 20 of the '748 Patent; and claim 1 of the '337 Patent.[10] RJCCS at 7.

The following claim limitations highlight selected usage of the term in context:

the step of performing comprises the step of adding, to at least one of a chart, a *report* and a graph, at least one of overlays, datapoint notes, and footnotes[,]

'355 Patent col. 57 ll. 58–60 (emphasis added),

the computer program product is configured for outputting a presentation or *report* that is based on at least a portion of the at least one object, the presentation or *report* capable of including at least one of the first numerical values or the second numerical values, including the original value, such that, based on the at least one reference of the at least one object, a change to the original value results in a corresponding change in an instance of the presentation or *report*.

'383 Patent col. 144 ll. 53–60 (emphasis added).

A.   Parties' Arguments

Plaintiffs argue "[t]here is no basis in the intrinsic record to depart from th[e] ordinary meaning" of "report." Pls.' Cl. Constr. Br. at 17 (citing '355 Patent col. 2 ll. 35–40). The government's construction, according to plaintiffs, "improperly attempts to limit the term 'report' to a preferred embodiment in the specification." *Id.* Plaintiffs contend the specification instructs style sheets are optional. *Id.* at 17–18 (citing '355 Patent col. 9 ll. 36–52). The government responds the use of the term in the claims and the specification supports its proposed construction requiring documents and templates. Def.'s Resp. Cl. Constr. Br. at 17. The government points to several instances where the specification cites style sheets and templates in reference to reports. *Id.* (citing '355 Patent col. 9 ll. 36–52 ("Similarly, Reusable Data Style Language ('RDSL') *style sheets* 106, another optional input to the data viewer 100, *can be applied to data documents to create specially-formatted output reports*. . . . These RDSL documents 106 are XSL-compliant style sheets which essentially act as report writers for RDML data documents 102. . . . The RDML data viewer 100 automatically combines data documents 102 and style documents 106 to create reports.") (emphasis in original), col. 12 ll. 4–7 ("*a report writer template* written for one dataset cannot typically be used for another. RDML, however, provides for reuse of style sheets in the same manner it provides reuse of data and macros") (emphasis in original), col. 16 l. 31 ("RDSL style sheets 106 act as templates for output reports."), col. 16 ll. 40–46 ("*The style sheet editor 222 is basically a report-writer* because the user can graphically compose a report from a sample document, specify the types of RDML data documents 102 that this report can apply to, automatically create a style sheet 106 when the result is acceptable, and then use the resulting style sheet to create a report from any qualifying RDML data document 102.") (emphasis in original)). According to the government, reports

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[10] "Due to an oversight Defendant neglected to list 'report' from claim 29 in the '842 Patent as a term requiring construction. It seeks the same construction for report in that patent as it does for the '355 Patent." Def.'s Surreply Cl. Constr. Br. at 10 n.2.

themselves, rather than style sheets as plaintiffs argue, are optional; "when that option is invoked it always employs style sheets as templates." *Id.* at 18 (emphasis omitted); *see* Def.'s Surreply Cl. Constr. Br. at 7 (The specification "does not state that reports may be generated without style sheets—the reports are optional features but when that feature is invoked it is through the use of style sheets."). Plaintiffs reply the government's construction seeks "to limit the claim to a preferred embodiment[,]" and they emphasize the specification's application of the word "optional" to style sheets. Pl.'s Reply Cl. Constr. Br. at 7–8 (citing '355 Patent col. 9 ll. 36–52).

Plaintiffs further argue claim differentiation prevents a construction requiring style sheets, as dependent claims 32 and 33 of the '842 Patent impose such a limitation. Pl.'s Cl. Constr. Br. at 18. The government responds the '842 Patent comes from a separate family than the other asserted patents, so claim differentiation does not apply, and the specific claims cited by plaintiffs provide other limitations—requiring multiple style sheets for claim 32 and regarding "certain data within the template that also appears in the report" for claim 33. Def.'s Resp. Cl. Constr. Br. at 18.

B.   Analysis

1.   The Court's Preliminary Construction

Before the *Markman* hearing, the Court considered the parties' claim construction briefs and all referenced materials in full in reaching a preliminary construction for this disputed term. The Court looked to a contemporary dictionary to understand the plain and ordinary meaning of the term at the time of filing. The Microsoft Computer Dictionary defines "report": "The presentation of information about a given topic, typically in printed form." *Report*, Microsoft Computer Dictionary (4th ed. 1999). "Presentation" is a disputed claim term often used in similar contexts to "report," *see* '383 Patent col. 144 ll. 53–60 ("the computer program product is configured for outputting a presentation or report that is based on at least a portion of the at least one object, the presentation or report capable of including at least one of the first numerical values or the second numerical values, including the original value, such that, based on the at least one reference of the at least one object, a change to the original value results in a corresponding change in an instance of the presentation or report"), so the Court did not use "presentation" in its preliminary construction to avoid conflating the terms. The Court instead substituted a phrase describing a "report" from the specification, "specially-formatted output," '355 Patent col. 9 ll. 38–39. The Court also removed the phrase "typically in printed form" from the dictionary definition because the technology of the patents is digital rather than print media. Reviewing the specification, the Court found a "report" was consistently discussed as a combination of data and a style reference. *E.g.*, '355 Patent col. 9 ll. 50–52 ("The RDML data viewer 100 automatically combines data documents 102 and style documents 106 to create reports."). The Court therefore incorporated the phrase "combining data documents with style documents" into its preliminary construction.

The Court adopted the following preliminary construction: "A specially formatted output of information about a given topic by combining data documents with style documents."

2.   The Court's Final Construction

At the *Markman* hearing, the Court provided the parties with the Court's preliminary construction. Tr. at 27:10–16. The parties raised several issues with the preliminary construction at oral argument. First, the government asserted neither "data documents" nor "style documents" should be plural as the patent does not require multiple of either to generate a report, and plaintiffs agreed. Tr. at 27:17–28:7 (the government), 33:7–9 (plaintiffs). As the specification sometimes refers to data or style sheets in the singular with reference to a "report," *see* '355 Patent col. 16 ll. 32–34 ("RDML data object . . . can be placed into a report using one or more different style sheets"), 36–38 ("a style sheet written for one RDML document . . . can be used for another"), 45–46 ("use the resulting style sheet to create a report from any qualifying RDML data document"), the Court alters its preliminary construction from plural to singular for the data and style components of a "report."

Second, the government argued for the insertion of "generated" before "by combining," emphasizing the importance of the process which produces a "report." Tr. at 28:9–16. A "report" and a "presentation" "can both look alike," according to the government, but a "report" is different from a "presentation" "because it was produced by this process." Tr. at 37:12–14. In supplemental briefing following the *Markman* hearing, the government states "generated by *applying* . . . to"—rather than "combining . . . with"—should be the construction, citing the specification. Def.'s Suppl. Cl. Constr. Br. at 1 (citing '355 Patent col. 9 ll. 46–48 ("single RDML data document . . . may contain a set of financial statements, but several different style sheets could be applied")) (emphasis added). The Court finds this proposed construction supported by the specification and therefore alters its preliminary construction to read "generated by applying . . . to." '355 Patent col. 9 ll. 46–48.

Third, the government contended the limitation "about a given topic" was inappropriate because a "report" in the patents is more general. Tr. at 28:17–29:4, 29:19–30:2. A "report" about multiple topics would raise the issue of whether it was one report or several, the government argued. Tr. at 29:12–16. As the limitation "about a given topic" came from the extrinsic dictionary definition and the specification and claim language do not provide a similar limitation, the Court removes the phrase "about a given topic" from its preliminary construction.

Fourth, plaintiffs asserted data used for a "report" need not be in a "data document" and more generally the construction of "report" should not be limited to a particular generation method. Tr. at 33:3–6, 34:18–25. The government disagreed. Tr. at 39:19–22. The Court notes plaintiffs suggest data used for a "report" could be stored in memory rather than a document, but plaintiffs provide no support from the claim language or specification. Tr. at 51:1–6 ("THE COURT: So where does the data value come from? [PLAINTIFFS]: In this particular claim, it happens to be in a data document as specified in the identifying phrase, but it doesn't have to be if it just was stored in the memory."). The specification, however, frequently refers to "data documents." *E.g.*, '355 Patent col. 8 ll. 53–56 ("The RDML data viewer works with RDML-formatted data documents, which are files that may be stored locally, over a network, including the Internet, or in any combination of sources."), col. 9 ll. 1–21 ("Generally, data viewer 100 may be software that resides in the memory of a computer and accepts several types of input 102, 104 and 106, one of which is the RDML data document 102. The RDML data document 102 may be an ASCII text document formatted with RDML tags which are compliant

with XML version 1.0. In one implementation consistent with the present invention, the tags of an RDML data document 102 are advantageously structured to include documentation of the data and arrange data in 'line items,' a collection of data values that is similar to a 'record' or 'row' in a relational database (discussed below). . . . RDML documents 102 contain sets of line items, such sets being analogous to 'tables' in relational databases, and documentation ('metadata') regarding the 'line item sets.' The RDML data document 102 is read by the RDML data viewer 100 which stores the data internally, making it available to a number of 'views' 108, which present the data in different ways (charts, tables, etc.) to a user (not shown)."). The Court therefore retains the "data document" language from the specification. *See, e.g.*, '355 Patent col. 9 ll. 50–52 ("The RDML data viewer 100 automatically combines data documents 102 and style documents 106 to create reports.").

In supplemental briefing following the *Markman* hearing, plaintiffs further cite Figure 14, reproduced below, of the '842 Patent and associated explanation in the specification for the premise style sheets are optional: "An XBRL instance document 222 or *report is developed as illustrated in FIG. 14. FIG 14 illustrates an exemplary section 1402 of an XBRL instance document 222 generated without a specified optional stylesheet filename.* There, exemplary section 1402 is essentially displayed as a text document without much formatting." Pls.' Suppl. Cl. Constr. Br. at 5 (emphasis in original) (citing '842 Patent col. 20 ll. 29–34).
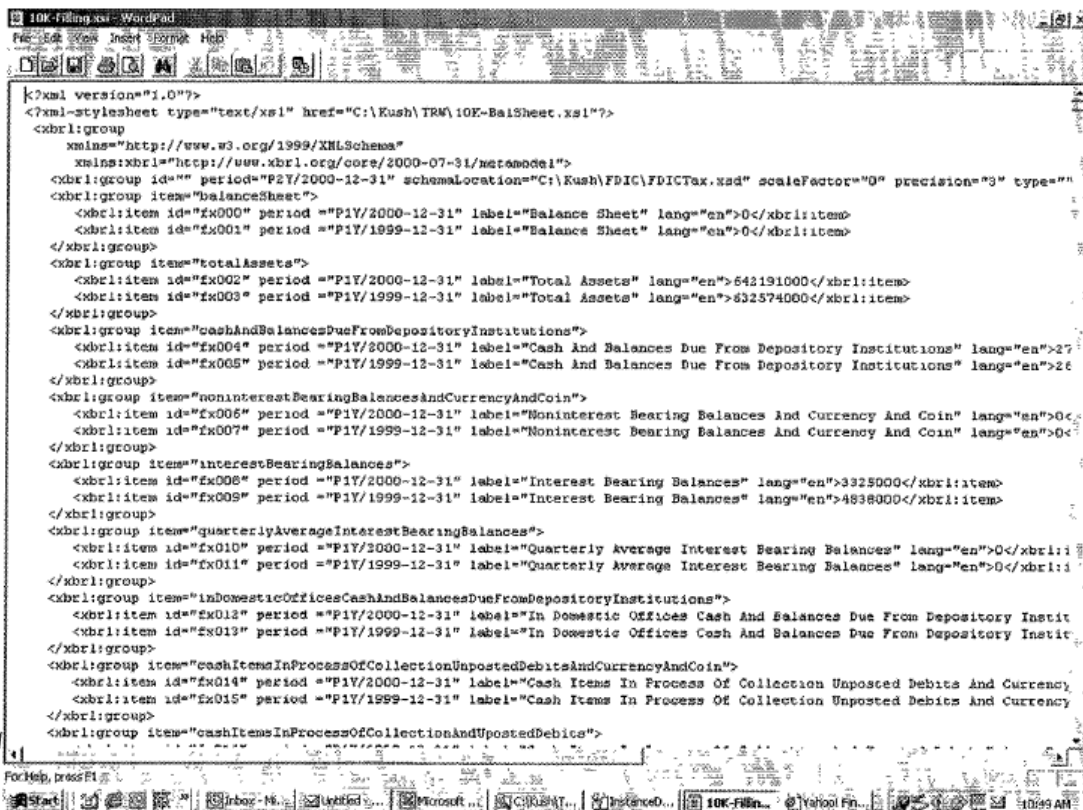
'842 Patent fig.14.

As the government notes, plaintiffs fail to explain how a non-familial patent, the '842 Patent, can

support their claim differentiation argument regarding the '355 Patent and others in its family. *See generally* Pls.' Cl. Constr. Br.; Pls.' Reply Cl. Constr. Br.; Pls.' Suppl. Cl. Constr. Br. The '842 specification is different from the '355 specification and others in its family, so there may be reason to construe a claim term from the '842 Patent differently than the '355 family. Additionally, as plaintiffs point out, "the Government had not sought construction of 'report' in the '842 patent until a footnote in its sur-reply claim construction brief." Pls.' Suppl. Cl. Constr. Br. at 5. In fact, neither party initially requested construction of "report" for the '842 Patent, so the Court construes the term only for the requested patents. *See Rembrandt Pat. Innovations, LLC v. Apple, Inc.*, 716 F. App'x 965, 974 n.3 (Fed. Cir. 2017) (declining to rely on an argument raised by a party for the first time in a trial court reply brief in reaching a decision on claim construction); *see generally* Pl.'s Cl. Constr. Br.; Def.'s Resp. Cl. Constr. Br. Even if the Court construed the term for the '842 Patent, Figure 14 and its explanation contemplate a default style sheet to generate a report "without *much* formatting"—impliedly still with some formatting—as evidenced by "10E-BalSheet.xsl" listed on the second line of Figure 14. '842 Patent col. 20 ll. 30–34, fig.14. Figure 14 therefore supports a construction of "report" requiring a style sheet. *Id.* The Court disagrees with plaintiffs' assumption claims 32 and 33 of the '842 Patent refer to style sheets. *See* Tr. at 51:10–20 ("[PLAINTIFFS]: . . . Claim 32 says, okay, in connection with that report, you're going to use a template, which is analogous to what the parties have—here, the Court and the parties have been referring to style sheets or style documents."). "Template" is used more broadly in the '355 Patent. For example, the '355 specification discusses a "string providing a template for the default representation of the x-axis values" and provides "formatting templates are regular expression strings," contemplating templates at the value-level—strings—rather than the document-level—style sheets. '355 Patent col. 24 ll. 36–37, col. 40 ll. 18–20. In the '842 Patent, "template" is used in the context of "document templates" as distinguished from style sheets. '842 Patent col. 9 ll. 28–45 (discussing "document templates"), col. 15 ll. 1–4 (discussing "document template"), ll. 4–33 (separately discussing style sheet)). The Court therefore understands claim 32—"The computer program product of claim 29, wherein the computer program product is configured such that one or more templates are used to develop the report."—and claim 33—"The computer program product of claim 32, wherein the computer program product is configured such that the one or more templates contain particular data that is inserted into the report and instructions enabling the data from the one or more sources to be inserted into the report."—to add requirements relating to document templates, overcoming any claim differentiation argument plaintiffs advance relating to "report" and the use of style sheets. '842 Patent col. 84 ll. 45–52.

Implementing modifications based on the specification evidence and agreement between the parties, the Court alters its preliminary construction and adopts the following final construction: "A specially formatted output of information generated by applying one or more data documents to one or more style documents." *See DeMarini Sports, Inc. v. Worth, Inc.*, 239 F.3d 1314, 1327 (Fed. Cir. 2001) ("We note that claim terms are not construed in a vacuum. Rather, to interpret claim terms we look to all of the intrinsic evidence as it pertains to the terms in question.").

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Plain and ordinary meaning	Document generated by combining an XML-compliant document with a template.

Court's Final Construction
A specially formatted output of information generated by applying one or more data documents to one or more style documents.

V. Disputed Claim Term #3: "presentation"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Plain and ordinary meaning	A visualization of the object that is displayed

The government disputes the construction of this claim term in the following claims: claim 14 of the '383 Patent; claim 66 of the '384 Patent; claims 11, 19, and 20 of the '748 Patent; and claim 1 of the '337 Patent. RJCCS at 31–32.

The following claim limitation highlights selected usage of the term in context:

> the computer program product is configured for outputting a *presentation* or report that is based on at least a portion of the at least one object, the *presentation* or report capable of including at least one of the first numerical values or the second numerical values, including the original value, such that, based on the at least one reference of the at least one object, a change to the original value results in a corresponding change in an instance of the *presentation* or report.

'383 Patent col. 144 ll. 52–60 (emphasis added).

A. Parties' Arguments

The parties dispute whether "presentation" needs a construction beyond plain and ordinary meaning to preserve a distinction between "presentation" and "report." *See generally supra* Section IV. Plaintiffs seek a plain and ordinary construction, arguing "the specification makes clear that 'presentation' is used in its ordinary sense." Pls.' Cl. Constr. Br. at 29. The government responds, "[T]he relevant claims and the specification . . . indicate that a 'presentation' is a visualization of an object that is displayed"—urging the Court to use "object" in the construction to differentiate between claim terms "report" and "presentation." Def.'s Resp. Cl. Constr. Br. at 28–29 (quoting '383 Patent col. 144 ll. 52–55) ("For example, Claim 14 of the [']383 Patent recites in part 'wherein the computer program product is configured for outputting a presentation or report that is based on at least a portion of the at least one object. . .'"); *see also id.* at 29 (quoting '383 Patent col. 7 ll. 25–29, col. 18 ll. 28–30, col. 29 ll. 19–21, col. 33 ll. 34–36, col. 41 ll. 36–37). Plaintiffs assert none of the citations the government cites use the term "presentation," and the government concedes the cited terms are variations of "presentation"—"presentations," "present," and "presents." Pls.' Reply Cl. Constr. Br. at 14; Def.'s Surreply Cl. Constr. Br. at 16.

B. Analysis

1. The Court's Preliminary Construction

Before the *Markman* hearing, the Court considered the parties' claim construction briefs and all referenced materials in full in reaching a preliminary construction for this disputed term. The Court first noted both parties argue about whether the term needs to be construed but focus their contention on whether the construction should contain the term "information" or "object." Def.'s Resp. Cl. Constr. Br. at 28. The government cites instances in the patents where it contends the specification provides support for using "object" in construing presentation; these instances are variations of "presentation"—i.e., "presentations," "present," "presents," and "presented." *Id.* at 29; *see, e.g.*, '383 Patent col. 7 ll. 25–29 ("The RDML data document 102 is read by the RDML data viewer 100 which stores the data internally, making it available to the number of 'views' 108, which present the data in different ways (charts, tables, etc.) to a user.") (emphasis omitted)). While the Court found "presentations" is synonymous as "presentation" as they are both nouns with only a singular/plural variation, the government's reference to "present," "presents," and "presented" are inapplicable to this construction because the terms are verbs holding a different meaning than the noun "presentation"—the verbs are the actions generating the display whereas the nouns describe the display itself. In addition to the government's references to the '383 Patent specification, the Court identified multiple other instances where "presentation(s)" is in the specification. *See, e.g.*, '383 Patent col. 144 ll. 55–60 ("[T]he presentation or report capable of including at least one of the first numerical values or the second numerical values, including the original values, such that, based on the at least one reference of the at least one object, a change to the original value results in a corresponding change in an instance of the presentation or report."), col. 8 ll. 17–23 ("RDML incorporates several important types of metadata: . . . information needed to produce the various presentations."). Based on the claim language and specification, the patents use "information" to describe what the "presentation" is displaying, and this "information"—such as values—is based on the "objects" at issue. *See* '383 Patent col. 144 ll. 54–60 ("[B]ased on the at least one reference of the at least one object, a change to the original value results in a corresponding change in an instance of the presentation or report."). The Court found the use of "information" in the patents with the term "presentation" shows the "presentation" is displaying the "information," and the displayed "information" references the "objects."

The Court then looked to a contemporary dictionary to seek to understand the plain and ordinary meaning of the term at the time of filing. The Court was unable to find a contemporary dictionary definition for "presentation" but was able to for "presentation graphics" and "presentation layer," which are instructive. Specifically, the Microsoft Computer Dictionary defines "presentation graphics" as "The representation of business *information*, such as sales figures and stock prices, in chart form rather than as lists of numbers." *Presentation graphics*, Microsoft Computer Dictionary (4th ed. 1999) (emphasis added). Within its definition of "presentation layer," the Microsoft Computer Dictionary notes "The presentation layer is responsible for formatting *information* so that *it can be displayed* or printed." *Presentation layer*, Microsoft Computer Dictionary (4th ed. 1999) (emphasis added). Finding the interpretation of "presentation" in these definitions accorded with the patents' use of "presentation," the Court determined these interpretations reinforced a construction using "information" over "object" and conformed with the plain and ordinary meaning of the term "presentation."

The Court evaluated whether the construction should use the word "visualization," as the

government proposed in its construction. Looking to the '383 specification, the Court noted the use of "visually displays," "visual components," "visual clues," "shows . . . visually," "visually designate," and "visual link." '383 Patent col. 4 l. 46, col. 11 l. 47, col. 35 l. 12, col. 41 ll. 40, 42, 67, col. 42 l. 44, col. 43 l. 64. The '383 specification does not use the word "visualization" but does repeatedly use "visual(ly)" to describe the information. "Visual" is an adjective describing what the invention is displaying whereas "visualization" is a noun which the government argues the invention displays. Webster's Third New International Dictionary (2002). Per the specification, the Court found the adjective "visual" conforms with the plain and ordinary meaning of "presentation" by describing the "visual" character of the information the invention displays.

The Court then looked to a modern dictionary to further determine how "visualization" from the government's proposed construction and "visual" from the specification differ. The Court was able to find a modern dictionary definition for both "visualization" and "visual." Specifically, the Webster's Third New International Dictionary defined "visualization" as "the act or power of forming *mentally* visual images of objects not presented to the eye" and "visual" as "capable of *being seen*." *Visualization*, Webster's Third New International Dictionary (2002) (emphasis added). Per the Webster's Third New International Dictionary, "visualization" is a noun containing a feature of mental imagery, which the Court found does not conform with the specification's use of "visually" and "visual"—in addition to the specification not using "visualization." *Visualization*, Webster's Third New International Dictionary (2002); *see also* '383 Patent col. 4 l. 46, col. 11 l. 47, col. 35 l. 12, col. 41 ll. 40, 42, 67, col. 42 l. 44, col. 43 l. 64. Unlike "visualization," "visual" is an adjective describing the characteristic of "being seen." Webster's Third New International Dictionary (2002). "Visual" is also the same as or synonymous to the relevant adjectives used in the specification. *See generally* '383 Patent col. 4 l. 46, col. 11 l. 47, col. 35 l. 12, col. 41 ll. 40, 42, 67, col. 42 l. 44, col. 43 l. 64 (using "visual" and "visually"). The Court determined the definition for the adjective "visual" reinforced a construction using "visual" over "visualization" and conformed with the plain and ordinary meaning of the term "presentation." The Court, accordingly, adopted the following preliminary construction: "Plain and ordinary meaning. Insofar as a definition is needed: A visual display of information."

2.   The Court's Final Construction

At the *Markman* hearing, the Court provided the parties with the Court's preliminary construction. Tr. at 56:4–7. The parties agreed to the Court's preliminary construction.[11] Tr. at 64:13–18. The Court accordingly adopts its preliminary construction as final: "Plain and ordinary meaning. Insofar as a definition is needed: A visual display of information." *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); Tr. at 64:13–18.

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[11] The government argued "A report is a report because of the way it was generated," indicating the government differentiated "report" and "presentation" by defining "report" according to how the document is generated and "presentation" according to what is on display. Tr. at 63:22–23. The government stated it agrees with the Court's preliminary construction for "presentation" as the Court adopts the government's construction for term 2, "report." Tr. at 59:7–60:8; *see generally supra* Section IV.

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Plain and ordinary meaning	A visualization of the object that is displayed
Court's Final Construction	
Plain and ordinary meaning. Insofar as a definition is needed: **A visual display of information.**	

VI.   Disputed Claim Term #4A: "rule" (in re the '383 and '748 Patents)

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Plain and ordinary meaning (*i.e.*, not limited to being in the Document Type Definition (DTD))	Constraint listed in a Document Type Definition (DTD)

The government disputes the construction of this claim term in claims 9 and 10 of the '383 Patent and claims 1, 12, 13, and 14 of the '748 Patent. RJCCS at 29–30.

The following claim limitation highlights selected usage of the term in context:

the computer program product is configured for utilizing a plurality of computer-readable rules for processing the XML-compliant data document, the computer-readable rules including: a computer-readable datatype *rule* for validation of a value type, a computer-readable calculation *rule* for validation of a value calculation, and a computer-readable unit *rule* for validation of a value unit.

'383 Patent col. 144 ll. 12–21.

A.   Parties' Arguments

While both parties propose the plain and ordinary meaning of the term "rule," the parties dispute whether the disputed term is required to be located in the Document Type Definition ("DTD"). The government proposes the plain and ordinary meaning requires "rule" to be limited to the DTD. Def.'s Resp. Cl. Constr. Br. at 25–26. Plaintiffs, citing *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004), argue the government's proposal "improperly attempts to limit the construction to a preferred embodiment." Pls.' Cl. Constr. Br. at 26; *see* Pls.' Reply Cl. Constr. Br. at 12. Plaintiffs assert the specification expressly indicates "one implementation" places the rules in the DTD, but it is only a single embodiment of the invention. Pls.' Cl. Constr. Br. at 26 (quoting '383 Patent col. 19 ll. 26–29) (internal quotations omitted). Plaintiffs point to language in the '842 Patent as further evidence confining a "rule" to the DTD is an embodiment, not a limitation of the invention. *Id.* at 27 (citing '842 Patent at col. 13 ll. 57–67). Plaintiffs argue the government's construction violates the doctrine of claim differentiation because "dependent claims of the related [']748 [P]atent make explicit that a rule need not be in the [DTD]." *Id.* (citing '748 Patent col. 142 ll. 24–48); *see* Pls.' Reply Cl. Constr. Br. at 12–13. Plaintiffs argue, if "rule" was limited to the DTD, dependent claim 9 of the '748 would be rendered meaningless, and the construction would violate claim differentiation in the

individual patents and across the familial patents. Pls.' Cl. Constr. Br. at 27–28 (citing *Acumed LLC v. Stryker Corp.*, 483 F.3d 800, 806 (Fed. Cir. 2007); *Trs. of Columbia Univ. v. Symantec Corp.*, 811 F.3d 1359, 1369 (Fed. Cir. 2016)). Plaintiffs rebut the government's contention "rule" should be construed differently in the '842 Patent because it is "directed to a different invention"—the '842 Patent was terminally disclaimed over the '383 Patent, so "rule" should not be construed differently across the patents. Pls.' Reply Cl. Constr. Br. at 13. Plaintiffs also argue the government's construction erroneously relies on Dr. Martin's conclusory opinion, contravening *Phillips* and contradicting plaintiffs' expert, Dr. Smith. Pls.' Cl. Constr. Br. at 28 (citing *Philips v. AWH Corp.*, 415 F.3d 1303, 1318 (Fed. Cir. 2005)).

The government argues, relying on *Bell Atlantic*, its proposed construction limiting "rule" to within the DTD is "consistent with the way this term is repeatedly used throughout the claims and the specification" of the asserted patents except the '842. Def.'s Resp. Cl. Constr. Br. at 25–26 (citing '383 Patent col. 13 ll. 45–48, col. 19 ll. 27–29, 51–52, col. 47 ll. 49–51; '748 Patent col. 13 ll. 41–48; *Bell Atl. Network Servs., Inc. v. Covad Communs. Grp., Inc.*, 262 F.3d 1258, 1271 (Fed. Cir. 2001)); *see* Def.'s Surreply Cl. Constr. Br. at 14. The government asserts the XML Bible's introduction on DTDs show a "rule" must be located within the DTD. Def.'s Resp. Cl. Constr. Br. at 26–27; *see* Def.'s Surreply Cl. Constr. Br. at 13–14. The government contends while one embodiment explicitly uses a specific exemplary DTD, other embodiments "may use other DTDs." Def.'s Resp. Cl. Constr. Br. at 26–27. The '842 Patent offering supplemental rules outside of the DTD context evidences a "rule" must be in the DTD in the '383 and '748 Patents, the government argues. Def.'s Resp. Cl. Constr. Br. at 27; *see* Def.'s Surreply Cl. Constr. Br. at 14–15. The government rejects plaintiffs' claim differentiation argument because claim 9 of the '748 Patent is from a different patent and plaintiffs "overlook[] meaningful distinctions between independent claim 1 . . . and dependent claim 9 of [the] patent." Def.'s Resp. Cl. Constr. Br. at 27–28. Additionally, the government asserts claim differentiation does not apply across non-familial patents. Def.'s Surreply Cl. Constr. Br. at 14–15.

B. Analysis

1. The Court's Preliminary Construction

Before the *Markman* hearing, the Court considered the parties' claim construction briefs and all referenced materials in full in reaching a preliminary construction for this disputed term. The Court first addressed the parties' dispute regarding whether a "rule," as used consistently, is located in the DTD. The claim language includes three types of rules: (1) "a computer-readable datatype rule for validation of a value type[; (2)] a computer-readable calculation rule for validation of a value calculation[;] and [(3)] a computer-readable unit rule for validation of a value unit." '383 Patent col. 144 ll. 17–21. All three "rule" types target validation of a particular data value or characteristic. *See id.* Datatype rules, however, are usually constrained by a DTD or a schema document. *See* Elliotte Rusty Harold, *XML Bible* 191 (1999). In contrast, unit or calculation rules would not have any relationship to a DTD. The different types also necessitate different validation. A DTD lays out the parameters for an RDML document and allows for a syntactical check. *See id.* A DTD would have no impact on the validation of a characteristic of a data value because the DTD specifies the structure of a document, not the accuracy of calculations within the document. *See id.* A calculation rule instead would rely on human

validation or a different software validation method. The Microsoft Computer Dictionary also supports the use of "rule" in various contexts: "In expert systems, a statement that can be used to *verify* premises and to enable a conclusion to be drawn." *Rule*, Microsoft Computer Dictionary (4th ed. 1999). The disputed term "rule," therefore, is not used consistently within a DTD context throughout the patents, as evidenced by the calculation and unit rule examples.

The Court next addressed whether the embodiment of the '383 Patent limits the construction of "rule." The Federal Circuit has instructed preferred embodiments are not read "into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited." *Liebel-Flarsheim Co.*, 358 F.3d at 913. The government cites to column 19, lines 27–29 of the '383 Patent to support limiting "rule" to within DTD. Def.'s Resp. Cl. Constr. Br. at 25–26. The cited lines, however, explicitly state, "In *one implementation* consistent with the present invention, RDML documents 102 conform to the rules provided by the DTD[.]" '383 Patent col. 19 ll. 27–29 (emphasis added). While a "rule" may be limited in the DTD in *an embodiment*, as it is here, a mere embodiment cannot limit the entire invention. *Liebel-Flarsheim Co.*, 358 F.3d at 913. Further, the intrinsic evidence does not clearly indicate the embodiment should limit the claims but rather indicates "rule" should not be construed so narrowly. Indeed, if the Court construed a "rule" to only include the DTD, the phrase "rules for processing the XML-compliant data document" would become redundant because rules to process the XML-compliant data document can include a DTD or a schema, but the limitation does not require the computer-readable "rule" itself to only include constraints listed in the DTD. Given claims are presumed to have different scopes, construing "rule" so narrowly would create redundancy in the claims. *See AK Steel Corp. v. Sollac & Ugine*, 344 F.3d 1234, 1242 (Fed. Cir. 2003) (citing *RF Del., Inc. v. Pac. Keystone Techs., Inc.*, 326 F.3d 1255, 1264 (Fed. Cir. 2003) (stating an independent claim is usually accorded a scope greater than its dependent claims); 35 U.S.C. § 112, ¶ 4 (2000) ("[A] claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.")) ("[D]ependent claims are presumed to be of narrower scope than the independent claims from which they depend."). The '355 family patents, therefore, do not support limiting a "rule" to only existing in the DTD as in the example '383 embodiment, and the additional discussion of the term in the '842 Patent does not change the fact the '355 family patents contemplate a "rule" existing outside the DTD. *Liebel-Flarsheim Co.*, 358 F.3d at 913; *see AK Steel*, 344 F.3d at 1242 (citing *RF Del.*, 326 F.3d at 1264; 35 U.S.C. § 112, ¶ 4).

The Court adopted the following preliminary construction: "Plain and ordinary meaning. Insofar as a definition is needed: A predetermined guideline or condition provided for a specific reason—including, *but not limited to*, verifying constraints listed in the Document Type Definition."

2. The Court's Final Construction

At the *Markman* hearing, the Court provided the parties with the Court's preliminary construction. Tr. at 65:6–12. The government continued to assert a "rule" must be constrained within the DTD. The government pointed to the '383 Patent specification to support the premise "a valid document . . . conform[s] with the rules in the DTD." Tr. at 77:1–25; *see* Def.'s Suppl.

Cl. Constr. Br. at 3. The government also attempted to distinguish between processing rules and validating rules. The government argued the rules in claim 9 of the '383 Patent relate to processing and are broader than the DTD. Tr. at 69:7–9, 70:11–13 ("THE COURT: . . . The preamble in claim 9 is broader than just the DTD? [THE GOVERNMENT]: Correct."). In contrast, validating rules are restricted to the DTD, according to the government. Tr. at 70:21–23 ("[THE GOVERNMENT]: Rules for processing . . . I'll distinguish . . . with rules for validating."), 73:6–8 ("THE GOVERNMENT]: All of the rules for validations need to be within the DTD, yes. An instruction is a rule for processing."); s*ee* Def.'s Suppl. Cl. Constr. Br. at 2–3 ("the *only* validation disclosed is based on the rules with a DTD") (emphasis altered). The government emphasized the additional disclosure of the '842 Patent indicates "rules outside of the DTD were not contemplated within the original patents[,]" and the '842 Patent supplements the '355 Patent family. Tr. at 66:19–67:3; *see* Def.'s Suppl. Cl. Constr. Br. at 3. Plaintiffs argued the what the government characterizes as a "preamble" is a substantive limitation because it is part of the dependent claim, prefacing the enumerated "rule" types with "comprising." Tr. at 71:8–15.

The government also relied on the knowledge of a person having ordinary skill in the art ("PHOSITA") and the XML Bible, which was incorporated into the asserted patents, to support the importation of a limitation from one exemplary embodiment. Tr. at 78:15–79:20 ("THE COURT: . . . [I]f there's a strict limitation, as you're suggesting, it has to be clear, right? [THE GOVERNMENT]: We maintain . . . this would be clear to a person of ordinary skill in the art, especially when . . . we have . . . a 1,000-page book that proclaimed itself to be 'the Bible,' which the patentee incorporated by reference."), 66:13–18. Plaintiffs argued reliance on the XML Bible creates a *Finjan* issue because the specification is broader than the XML Bible. Tr. at 74:9–13; *see Finjan LLC v. ESET, LLC*, 51 F.4th 1377, 1382–83 (Fed. Cir. 2022) (finding the trial court "erred because it viewed the differing definitions throughout the patent family as competing and determined that the asserted patents should be limited to the most restricted definition of the term").

The Court finds the government's arguments unpersuasive. Claim terms are "normally used consistently throughout the patent," *Phillips*, 415 F.3d at 1314, and "ordinarily interpret[ed] . . . consistently across patents having the same specification[.]" *In re Katz Interactive Call Processing Pat. Litig.*, 639 F.3d 1303, 1325 (Fed. Cir. 2011); *see also Callicrate v. Wadsworth Mfg., Inc.*, 427 F.3d 1361, 1369 (Fed. Cir. 2005). Applying the three types of rules (datatype, calculations, and value) to the government's narrow construction of "rule," the government was unable to confirm whether a unit rule or a calculation rule would be located within the DTD. *See* Tr. at 73:4–77:25. Comparing the claim language, a DTD may specify rules for a datatype validation but does not contain calculation rules. The XML Bible also confirms this idea: "A document type definition provides a list of the elements, attributes, notations, and entities contained in a document, as well as their relationships to one another. DTDs specify a set of rules for the *structure* of a document." Harold, *supra*, at 191 (emphasis added). The XML Bible bolsters the Court's construction because DTDs specify rules for structure of the document, not calculation type rules. *Id.* Further, the XML Bible contemplates the existence of rules outside the DTD: "[An example] style sheet contains style *rules* for elements that aren't present in the DTD . . . ." *Id.* at 211–12 (emphasis added). While style rules are not at issue for this disputed term, the XML Bible's reference to any rule outside of a DTD contradicts the government's

argument the XML Bible supports its limited interpretation. When pressed on whether a calculation could be in the DTD, the government stated "[w]hether there actually could be a calculation rule in the DTD is ultimately a question for expert discovery[,]" alongside the issues of enablement and written description. Tr. at 75:7–9, 17–19. The Federal Circuit, however, has "not endorsed a regime in which validity analysis is a regular component of claim construction." *Phillips*, 415 F.3d at 1327. The Court, therefore, does not address enablement or written description arguments at this stage of litigation.

The language the government uses to support its construction highlights the DTD *has* rules rather than showing rules *are required* to be in the DTD. Tr. at 77:3–78:16 ("THE COURT: Well, it's that the DTD has rules, not that rules must be in the DTD. [THE GOVERNMENT]: . . . I agree with you that it says that the DTD has rules . . . ."). The language used, moreover, is an embodiment. A single embodiment cannot be imported without clear evidence from the patent; the government failed to provide clear evidence supporting a DTD limitation on "rule." *See supra* Section VI.B.1; *Liebel-Flarsheim Co.*, 358 F.3d at 913.

The government's attempt to distinguish "validating rules" from "processing rules" does not support the government's proposed construction either. *See* Tr. at 70:21–23. The government posits claim 9 is broader than the DTD. Tr. at 70:8–9 ("[THE GOVERNMENT]: . . . [W]e read the preamble to be broader tha[n] DTD rules[.]"). This notion, however, supports the Court's construction because "rule" must be able to accommodate a broad context to be read "consistently throughout the patent" without being confined to the DTD. *Phillips*, 415 F.3d at 1314. In sum, the government does not know if unit or calculation rules can even be in the DTD, and it cannot point to language within the specification, besides an embodiment, to bolster the argument a "rule" must be contained in the DTD. *See id.*; *Liebel-Flarsheim Co.*, 358 F.3d at 913. The Court accordingly rejects the government's limitation.

In addition to the government's DTD limitation arguments—which the Court rejects—the government objected to certain terminology in the Court's preliminary construction. The government specifically disagreed with the use of the words "guideline" and "verifying" and with the inclusion of the phrase "provided for a specific reason." Tr. at 67:4–15, 81:6–14 (discussing term 4B). The government asserted "guideline" implies a suggestion rather than a requirement. *Id.* "A rule is something that's validated[,]" the government stated, and is therefore required. *Id.* Further, the government argued the phrase "provided for a specific reason" "invites argument about . . . what the reason is for a rule." *Id.* The government also disagreed with using "verifying" because the claim language uses validation rather than verification. *Id.* While plaintiffs agreed to the preliminary construction, plaintiffs also agreed to language modifications describing "rule" as a requirement. Tr. at 72:3–14 ("THE COURT: . . . Are you happy with guideline or condition, or could we change that to requirement or some other word? [PLAINTIFFS]: . . . Your Honor's construction is fine. Guideline . . . could say requirement or condition. It's fine that way. The whole concept is it has to meet a certain test. As long as . . . you have to meet a test for data type unit and calculations, and as long as that concept is embodied with guideline or condition . . . that would be sufficient."). Looking to the claim language, the Court accordingly alters its preliminary construction by using the words "requirement" and "validating" instead of "guideline" and "verifying," respectively, and removing the phrase "provided for a specific reason" to avoid unduly limiting the plain meaning

of the term.

Rejecting the government's DTD limitation and implementing modifications based on clarity and the claim language evidence, the Court alters its preliminary construction and adopts the following final construction: "Plain and ordinary meaning. Insofar as a definition is needed: A predetermined requirement including but not limited to validating constraints listed in the Document Type Definition." *See Phillips*, 415 F.3d at 1312–13 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Plain and ordinary meaning (*i.e.*, not limited to being in the Document Type Definition (DTD))	Constraint listed in a Document Type Definition (DTD)
Court's Final Construction	
Plain and ordinary meaning. Insofar as a definition is needed: **A predetermined requirement including but not limited to validating constraints listed in the Document Type Definition.**	

VII.   Disputed Claim Term #4B: "rule" (in re the '842 Patent)

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Plain and ordinary meaning (*i.e.*, not limited to being in the Document Type Definition (DTD))	Plain and ordinary meaning

The government disputes the construction of this claim term in claim 29 of the '842 Patent. RJCCS at 29–30.

The following claim limitation highlights selected usage of the term in context:

> code stored on the at least one non-transitory computer readable medium and configured to cause the at least one hardware processor to access a plurality of computer-readable rules including: a computer-readable datatype *rule* for validation of a type of data values, a computer-readable calculation *rule* for validation of a calculation involving data values, and a computer-readable unit *rule* for validation of a unit of data values . . . .

'842 Patent col. 83 ll. 58–67.

A.   Parties' Arguments

In the briefs, the parties argued the constructions of the terms 4A and 4B together, presenting no arguments unique to this term. *See* Pls.' Cl. Constr. Br. at 40–41; Def.'s Resp. Cl. Constr. Br. at 42; Pl.'s Reply Cl. Constr. Br. at 19; Def.'s Surreply Cl. Constr. Br. at 19; Def.'s Suppl. Cl. Constr. Br. at 2–4. As such, the Court refers to the parties' arguments section of

disputed term 4A, *supra* Section VI.A, in construing this term.

B. Analysis

1. The Court's Preliminary Construction

As the parties argued the constructions of terms 4A and 4B together, and the Court preliminarily found the DTD limitation not supported by any of the asserted patents, *see supra* Section VI.B.1, the Court preliminarily construed the terms together. As such, the Court refers to its preliminary construction section of term 4A, *supra* Section VI.B.1.

2. The Court's Final Construction

At the *Markman* hearing, the Court provided the parties with the Court's preliminary construction. Tr. at 80:9–16. Plaintiffs agreed with the Court's preliminary construction with the modifications discussed *supra* Section VI.B.2. Tr. at 84:6–12. The government agrees to a plain and ordinary meaning construction here but raised the same language objections at oral argument as it did for term 4A. Tr. at 81:6–14. Additionally, the government argued "rule" should be construed differently in the '355 Patent family and the '842 Patent. Tr. at 81:22–25; *see* Def.'s Suppl. Cl. Constr. Br. at 3–4. The government asserted because the '842 Patent has additional disclosure in the specification, it should be construed differently from the patents in the '355 family, despite being related and using nearly identical claim language referring to the three types of rules. Tr. at 81:22–82:25. *Compare* '383 Patent col. 144 ll. 17–21 ("a computer-readable datatype rule for validation of a value type, a computer-readable calculation rule for validation of a value calculation, and a computer-readable unit rule for validation of a value unit"), *with* '842 Patent col. 83 ll. 62–67 ("a computer-readable datatype rule for validation of a type of data values, a computer-readable calculation rule for validation of a calculation involving data values, and a computer-readable unit rule for validation of a unit of data values"). When asked what caselaw supports the argument, the government was unable to identify any. *See* Tr. at 83:10–21 ("THE COURT: Well, since the patents are from the same family, is there any Federal Circuit case that would support construing these differently? [THE GOVERNMENT]: I can't—I don't have a specific case in my head . . . ."). Claim terms are "normally used consistently throughout the patent," *Phillips*, 415 F.3d at 1314, and "ordinarily interpret[ed] . . . consistently across patents having the same specification[.]" *In re Katz Interactive Call Processing Pat. Litig.*, 639 F.3d 1303, 1325 (Fed. Cir. 2011); *see also Callicrate v. Wadsworth Mfg., Inc.*, 427 F.3d 1361, 1369 (Fed. Cir. 2005). The Court, therefore, rejects the government's arguments this claim term should be construed differently for the '842 Patent.

Implementing modifications based on the final construction of term 4A, *see supra* Section VI.B.2, the Court alters its preliminary construction and adopts the following final construction: "Plain and ordinary meaning. Insofar as a definition is needed: A predetermined requirement including but not limited to validating constraints listed in the Document Type Definition."

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Plain and ordinary meaning (*i.e.*, not limited	Plain and ordinary meaning

to being in the Document Type Definition (DTD))	
Court's Final Construction	
Plain and ordinary meaning. Insofar as a definition is needed: **A predetermined requirement including but not limited to validating constraints listed in the Document Type Definition.**	

VIII.   Disputed Claim Term #5: "data values/values"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Plain and ordinary meaning	Plain and ordinary (*i.e.*, not limited to numerical values)

Both parties dispute the construction of this claim term in the following claims: claim 66 of the '384 Patent; claims 1, 11, and 19 of the '748 Patent; claim 29 of the '842 Patent; and claim 1 of the '337 Patent. RJCCS at 42–43.

The following claim limitations highlight selected usage of the term in context:

the plurality of original documents including a first document including first *values* and a second document including second *values*[,]

'384 Patent col. 93 ll. 33–35 (emphasis added),

a plurality of line items with a plurality of *data values*, and a plurality of computer-readable semantic tags that describe a semantic meaning of the *data values* and are each computer-readably coupled to at least one of the *data values*,

'748 Patent col. 141 ll. 9–15 (emphasis added),

mapping the one or more of the computer-readable semantic tags to the one or more of the original *values* . . . .

'337 Patent col. 111 ll. 29–30 (emphasis added).

A.   Parties' Arguments

Plaintiffs argue the context of the patents makes clear (data) values referred to are numerical. Pls.' Cl. Constr. Br. at 33 (citing '384 Patent col. 3 l. 3–col. 5 l. 53, col. 28 ll. 41–51, col. 30 ll. 3–15). The Court, however, does not need "to adjudicate the difference between the parties because they both agree that the terms should have 'plain and ordinary meaning,'" plaintiffs assert. *Id.* at 33–34. The government argues (data) values are not limited to numerical values because "some of [plaintiffs'] claims specifically recite 'numerical values' and other[s] recite the more generic 'values.'" Def.'s Resp. Cl. Constr. Br. at 35. The government also points to a specific example in the '384 Patent of nonnumerical values. *Id.* at 36 (citing '384

Patent col. 56 ll. 17–18 (showing a <data_x> element with company abbreviation values "AUD, BSYS, CEN, CSC, CVG, DST, EDS, FISV, GLC, PAYX, TSG, SDS")). The government contends the parties' dispute over whether values must be numerical should be resolved under *O2 Micro*. *Id.*

B.   Analysis

1.   The Court's Preliminary Construction

Before the *Markman* hearing, the Court considered the parties' claim construction briefs and all referenced materials in full in reaching a preliminary construction for this disputed term. The Court first looked to a contemporary dictionary as both parties agree the term should have its plain and ordinary meaning. "Data value" is defined as "[t]he literal or interpreted meaning of a data item, such as an entry in a database, or a type, such as an integer, that can be used for a variable." *Data value*, Microsoft Computer Dictionary (4th ed. 1999). The contemporary definition is not limited to numerical values, and in fact contemplates nonnumerical values through its reference to a type, which can include nonnumerical character strings and Booleans as well as integers. The Court found the definition supported the evidence from the specification, which includes an example of nonnumerical values. '384 Patent col. 56 ll. 17–18. The final phrase of the Microsoft Computer Dictionary definition, "that can be used for a variable," however, adds scope to the patents, which do not necessarily contemplate storing (data) values as variables. The Court therefore removed this phrase when crafting its preliminary construction.

The Court adopted the following preliminary construction: "Plain and ordinary meaning. Insofar as a definition is needed: The literal or interpreted meaning of a data item, such as an entry in a database, or a type, such as an integer, not limited to numerical values."

2.   The Court's Final Construction

At the *Markman* hearing, the Court provided the parties with the Court's preliminary construction. Tr. at 85:18–23. Plaintiffs continued to argue for limiting the construction to numerical values at the hearing. First, plaintiffs contended the phrase the Court removed from the Microsoft Computer Dictionary definition, "that can be used for a variable[,]" supported their position because "variable" implies a numerical value. Tr. at 86:14–21. The Court, however, removed this phrase out of concern for importing a particular storage requirement; as the Court analyzes *supra* Section VIII.B.1, "a type . . . that can be used for a *variable*" could be nonnumerical, such as a Boolean, so the presence of the word "variable" in this definition does not imply only numerical values. *Data value*, Microsoft Computer Dictionary (4th ed. 1999) (emphasis added). Plaintiffs further argued "any [PHOSITA] reading the patent would very much think it's relating to numbers, even though the claim language uses the term 'data value or values' without—while other claims use the term 'numerical values.'" Tr. at 86:21–25. When asked regarding the "tag <data_x> where the only used attributed is x_TitleCompany and the contents of the tag appear to be company abbreviations. . . . Are those data values?" plaintiffs' counsel stated, "I think those probably would not be, but . . . They should be—if you construe 'data values' as numerical values, no, they're not, but I understand what the Court is saying." Tr.

at 91:5–18. Plaintiffs are not able to overcome the appendix example of nonnumerical data values, so the Court does not add a numerical-only limitation to the plain and ordinary meaning of the term. The Court accordingly adopts its preliminary construction as final: "Plain and ordinary meaning. Insofar as a definition is needed: The literal or interpreted meaning of a data item, such as an entry in a database, or a type, such as an integer, not limited to numerical values." *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Plain and ordinary meaning	Plain and ordinary (i.e., not limited to numerical values)
Court's Final Construction	
Plain and ordinary meaning. Insofar as a definition is needed: **The literal or interpreted meaning of a data item, such as an entry in a database, or a type, such as an integer, not limited to numerical values.**	

IX. Disputed Claim Term #6: "data structure"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
An organizational scheme that can be applied to data to facilitate interpreting the data or performing operations on it	Plain and ordinary meaning

Plaintiffs dispute the construction of this claim term in claim 66 of the '384 Patent. RJCCS at 44.

The following claim limitations highlight selected usage of the term in context:

code stored on the at least one non-transitory computer readable medium and configured to cause the at least one hardware processor to process at least a part of the first document and at least a part of the second document, resulting in at least one *data structure* including at least one of the plurality of original values of at least one of the plurality of original documents

'384 Patent col. 93 ll. 36–42,

code stored on the at least one non-transitory computer readable medium and configured to cause the at least one hardware processor to generate a presentation utilizing at least a portion of the at least one *data structure*, the presentation capable of including at least a portion of the original values including the at least one original value, where the computer program product is configured such that, utilizing the at least one *data structure*, a change to the at least one original value results in a corresponding change in a subsequently generated presentation . . . .

'384 Patent col. 93 l. 58–col. 94 l. 7.

A.   Parties' Arguments

Plaintiffs argue their proposed construction, in accord with the well-understood meaning of the term, should be adopted. Pls.' Cl. Constr. Br. at 34 (citing *Data structure*, Microsoft Computer Dictionary (4th ed. 1999) ("An organizational scheme, such as a record or array, that can be applied to data to facilitate interpreting the data or performing operations on it.")). Plain and ordinary meaning, plaintiffs contend, does not resolve the parties' dispute as to the scope of the claim term. *Id.*; *see* Pls.' Reply Cl. Constr. Br. at 16–17. The government responds plaintiffs have not "presented an actual dispute arising from this term that would actually implicate *O2 Micro* and require construing this term." Def.'s Resp. Cl. Constr. Br. at 37; *see* Def.'s Surreply Cl. Const. Br. at 18.

B.   Analysis

1.   The Court's Preliminary Construction

Before the *Markman* hearing, the Court considered the parties' claim construction briefs and all referenced materials in full in reaching a preliminary construction for this disputed term. The Court found the government's proposed construction of plain and ordinary meaning supported by the intrinsic evidence and found plaintiffs' proposed construction, using part of a definition from the Microsoft Computer Dictionary, an appropriate explication of the plain and ordinary meaning. *See* '384 Patent col. 19 ll. 6–9, col. 28 ll. 1–10, 22–30, col. 31 ll. 26–29, col. 46 ll. 61–63, col. 52 ll. 45–50. As such, the Court adopted the following preliminary construction: "Plain and ordinary meaning. Insofar as a definition is needed: An organizational scheme that can be applied to data to facilitate interpreting the data or performing operations on it."

2.   The Court's Final Construction

The Court provided the parties with its preliminary construction. Tr. at 6:8–10. At the *Markman* hearing, the parties came to an agreement on the construction of this term, using the Microsoft Computer Dictionary's full definition, including the phrase "such as a record or array." Tr. at 96:19–20, 97:25–98:10. The Court accordingly adopts the following final construction: "Plain and ordinary meaning. Insofar as a definition is needed: An organizational scheme, such as a record or array, that can be applied to data to facilitate interpreting the data or performing operations on it." *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
An organizational scheme that can be applied to data to facilitate interpreting the data or performing operations on it	Plain and ordinary meaning
Court's Final Construction	

> Plain and ordinary meaning. Insofar as a definition is needed:
>
> **An organizational scheme, such as a record or array, that can be applied to data to facilitate interpreting the data or performing operations on it.**

X. Disputed Claim Term #7: "macro"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Interpreted code that performs one or more well-defined, generally limited tasks	Short program which performs one or more well-defined, generally limited tasks

Both parties dispute the construction of this claim term in claims 1, 2, 3, 4, 6, 25, 26, 27, 28, 29, 30, 31, 33, 52, 53, 54, and 55 of the '355 Patent. RJCCS at 4.

The following claim limitations highlight selected usage of the term in context:

> receiving a *macro* defined to perform an operation on the series of numerical values; performing an operation defined by the *macro* on the series of numerical values to transform the series of numerical values into a new representation of the series of numerical values based on the tags . . . .

'355 Patent col. 56 ll. 40–45.

A. Parties' Arguments

Plaintiffs argue in favor of "interpreted code" "because the claims explicitly say that the macro contains interpreted code." Pls.' Cl. Constr. Br. at 15 (citing '355 Patent col. 56 ll. 34–56). The government responds this insertion "unnecessarily adds a limitation" as the claim language refers to macros "including" and "compris[ing]" interpreted code. Def.'s Resp. Cl. Constr. Br. at 15 (citing '355 Patent col. 56 ll. 34–56, col 58 ll. 22–45). Plaintiffs reply the government ignores the specification's references to an interpreter which receives a macro. Pls.' Reply Cl. Constr. Br. at 5–6 (citing '355 Patent col. 2 ll. 54–62, col. 7 ll. 37–39, col. 13 ll. 27–43, col. 53 ll. 22–32).

B. Analysis

1. The Court's Preliminary Construction

Before the *Markman* hearing, the Court considered the parties' claim construction briefs and all referenced materials in full in reaching a preliminary construction for this disputed term. The Court found the government's proposed construction supported by the intrinsic evidence with one modification. The government's proposed construction utilizes language from the specification, *see* '355 Patent col. 2 ll. 55–57, but the specification also uses broader language to refer to macros. *See id.* col. 2 ll. 54–55 ("Analysis routines in conventional spreadsheets typically take the form of 'spreadsheet macros.'"), col. 10 ll. 60–63 ("Furthermore, analytic routines (macros) can be combined, applied successively, or used by inheritance to create new

routines."). As such, the Court adopted the following preliminary construction: "Plain and ordinary meaning. Insofar as a definition is needed: Analysis (or analytic) routine which performs well-defined, generally limited tasks."

2. The Court's Final Construction

The Court provided the parties with its preliminary construction. Tr. at 6:8–10. At the *Markman* hearing, plaintiffs agreed to the government's proposed construction rather than the Court's preliminary construction. Tr. at 98:11–22. The Court accordingly adopts the following final construction: "Short program which performs one or more well-defined, generally limited tasks." *See DeMarini Sports, Inc. v. Worth, Inc.*, 239 F.3d 1314, 1327 (Fed. Cir. 2001) ("We note that claim terms are not construed in a vacuum. Rather, to interpret claim terms we look to all of the intrinsic evidence as it pertains to the terms in question.").

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Interpreted code that performs one or more well-defined, generally limited tasks	Short program which performs one or more well-defined, generally limited tasks
Court's Final Construction	
Short program which performs one or more well-defined, generally limited tasks.	

XI. Disputed Claim Term #8: "tags"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Markup language tags	Markup language tags. Further, a markup language is "a language that uses tags to define elements within a document. Examples of markup languages include HTML, XML and XBRL."

The government disputes the construction of this claim term in the following claims: claims 1, 13, 14, 15, 27, 28, 40, 41, 42, and 54 of the '355 Patent; claims 1, 3, 4, 5, 6, 7, 8, 10, 17, 19, 20, 21, 22, 23, 24, 25, 26, and 27 of the '816 Patent; and claims 1, 4, and 17 of the '383 Patent. RJCCS at 3–4.

The following claim limitation highlights selected usage of the term in context:

receiving a series of numerical values having *tags* indicating characteristics of the numerical values . . . .

'355 Patent col. 56 ll. 36–37.

A. Parties' Arguments

Plaintiffs argue "[t]here is no need to define the contours of a 'markup language' here where the claim at issue does not contain that term." Pls.' Cl. Constr. Br. at 14. The government responds clarity is needed on the meaning of "markup language" in the context of this term

because plaintiffs referenced "tags" in their motion to dismiss arguments on invalidity and must therefore "propose a construction of 'tags' that explains what limitations distinguish these 'tags' over prior art markup language tags or acknowledge that its 'tags' are no different than prior art markup language tags[.]" Def.'s Resp. Cl. Constr. Br. at 14. Plaintiffs further argue "markup language" should be addressed as it is used in the '337 Patent. Pls.' Reply Cl. Constr. Br. at 5.

B.   Analysis

1.   The Court's Preliminary Construction

Before the *Markman* hearing, the Court considered the parties' claim construction briefs and all referenced materials in full in reaching a preliminary construction for this disputed term. The Court first looked to a contemporary dictionary to understand the plain and ordinary meaning of the term at the time of filing. The Microsoft Computer Dictionary defines "tag" as "[i]n markup languages such as SGML and HTML, a code that identifies an element in a document, such as a heading or a paragraph, for the purposes of formatting, indexing, and linking information in the document." *Tag*, Microsoft Computer Dictionary (4th ed. 1999). The Court found this definition generally supported by the specification but found "code" to be vague in this context. The Court therefore added a phrase describing "tags" from the specification: "special sequences of characters." '355 Patent col. 1 ll. 32–36 ("A markup language is a way of embedding markup 'tags,' special sequences of characters, that describe the structure as well as the behavior of a document and instruct a web browser or other program on how to display the document."). The Court accordingly adopted the following preliminary construction, incorporating its preliminary construction of "markup language": "Plain and ordinary meaning. Insofar as a definition is needed: Code or special sequences of characters identifying an element within a document in a markup language. Further, a markup language is a language that uses tags to define elements within a document. Examples of markup languages include Hypertext Markup Language (HTML), Extensible Markup Language (XML), and Standard Generalized Markup Language (SGML)."

2.   The Court's Final Construction

At the *Markman* hearing, the Court provided the parties with the Court's preliminary construction. Tr. at 99:7–17. Both parties agreed to the Court's preliminary construction with the modification of incorporating the agreed-upon final construction of "markup language," *see supra* Section III. Tr. at 106:4–19. The Court accordingly adopts the following final construction: "Plain and ordinary meaning. Insofar as a definition is needed: Code or special sequences of characters identifying an element within a document in a markup language. Further, a markup language is a nonprogramming computer language using tags to define elements within a document. Examples of markup languages that existed as of 21 May 1999 include Hypertext Markup Language (HTML), Extensible Markup Language (XML), and Standard Generalized Markup Language (SGML). Extensible Reporting Business Language (XBRL) is an example after 31 July 2000." *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Markup language tags	Markup language tags. Further, a markup language is "a language that uses tags to define elements within a document. Examples of markup languages include HTML, XML and XBRL."
Court's Final Construction	
Plain and ordinary meaning. Insofar as a definition is needed: **Code or special sequences of characters identifying an element within a document in a markup language. Further, a markup language is a nonprogramming computer language using tags to define elements within a document. Examples of markup languages that existed as of 21 May 1999 include Hypertext Markup Language (HTML), Extensible Markup Language (XML), and Standard Generalized Markup Language (SGML). Extensible Reporting Business Language (XBRL) is an example after 31 July 2000.**	

XII. Disputed Claim Term #9: "characteristic of the numerical value"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
An attribute that explains the meaning of the numerical value	Plain and ordinary meaning

Plaintiffs dispute the construction of this claim term in claim 27 of the '816 Patent. RJCCS at 17.

The following claim limitation highlights selected usage of the term in context:

receiving a request for a numerical value, the request indicating at least one *characteristic of the numerical value . . . .*

'816 Patent col. 58 ll. 20–21.

A.   Parties' Arguments

Plaintiffs argue "[t]he Government's construction is vague and gives no effect to the '816 patents [sic] teachings about the use of attributes to explain the meaning of numerical values." Pls.' Cl. Constr. Br. at 23. The government responds the "x_prec" attribute from the specification provides an example of an attribute regarding the visual display rather than meaning of the number, so plaintiffs' proposed construction is too limiting. Def.'s Resp. Cl. Constr. Br. at 22 (citing '816 Patent col. 24 ll. 40–50, col. 4 ll. 31–33). The government further contends "explains" is inappropriate because the specification uses "describes." [12] *Id.* at 22–23

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[12] The government also raises an indefiniteness issue with plaintiffs' proposed construction. Def.'s Resp. Cl. Constr. Br. at 23. The Court does not address the indefiniteness argument at this time as it construes only disputed terms not implicating indefiniteness in this Opinion and Order.

(citing '816 Patent at [57], col. 4 ll. 31–33, col. 8 ll. 41–43, col. 10 ll. 7–10). Plaintiffs reply the "x_prec" attribute gives the precision of a number—how many significant digits it has—rather than mere formatting. Pls.' Reply Cl. Constr. Br. at 2–3, 10–11. The government contends even this explanation relates to the appearance rather than meaning of the number. Def.'s Surreply Cl. Const. Br. at 1–2.

B.   Analysis

1.   The Court's Preliminary Construction

Before the *Markman* hearing, the Court considered the parties' claim construction briefs and all referenced materials in full in reaching a preliminary construction for this disputed term. The Court first looked to the specification, which provides: "Methods and systems in accordance with the present invention provide a chart view that automatically manipulates and graphically displays numerical data. The manipulation and display is based on attributes associated with the numerical data describing characteristics of the numerical data." '355 Patent col. 4 ll. 26–35. In view of the specification, the Court found a PHOSITA would understand attributes are "associated with" and provide additional information about numerical values. As some attributes are used for information related to format rather than meaning, the Court could not limit the information to only relating to meaning. *See id.* col. 24 ll. 50–57 ("The x_prec attribute describes the precision or number of significant digits for purposes of axis label display. In this attribute, negative numbers cause rounding of amounts greater than zero. For example, a precision of '2' will display a number as '8.254.43'. That same number with a precision of '-2' will be displayed as '8,300.' The underlying representation of the number will be the full value; only the formatting and representation on the screen will change."). The Court accordingly adopted the following preliminary construction: "Plain and ordinary meaning. Insofar as a definition is needed: An attribute providing additional information about a numerical value—including but not limited to describing the meaning of the numerical value."

2.   The Court's Final Construction

At the *Markman* hearing, the Court provided the parties with the Court's preliminary construction. Tr. at 106:21–107:1. The government continued to argue the term does not require construction, asserting the "plain English meaning of characteristic" suffices, and raising the concern "attribute" could be overloaded between the plain English and the computer science meanings. Tr. at 109:4–16. Plaintiffs contended "attribute" was used only in the computer science meaning and agreed to the Court's preliminary construction after adding "[a] tag attribute" to clarify which sense of the word is meant. Tr. at 111:6–18 ("THE COURT: So if we add a tag attribute, are you okay with the Court's preliminary construction? [PLAINTIFFS]: Yes."). The government asserted "characteristics" are not necessarily associated with a tag based on the language of the claim cited for this term. Tr. at 110:15–111:3. The claim language, however, explicitly associates tags with "characteristics": "wherein at least one of the *tags* has the *indicated characteristic* of the requested numerical value[.]" '816 Patent col. 58 ll. 29–30 (emphasis added). Further, the specification associates characteristics with tag attributes. *See* '355 Patent col. 4 ll. 31–33 ("The manipulation and display is based on attributes associated with the numerical data describing characteristics of the numerical data."); *see also* Tr. at 112:14–20

("[PLAINTIFFS]: . . . The specification is very clear that it's referring to characteristics, it's referring to attributes within the markup language tag to provide meaning to the numbers."). The government further cited examples from the specification of transforming series of numerical values for the premise characteristics are not necessarily related to tags, but the cited portions of the specification either do not use the term "characteristic" or use it explicitly in association with tags and attributes. Tr. at 117:1–118:13 (citing '355 Patent col. 5 ll. 19–52), 119:6–120:1 (citing '355 Patent col. 4 ll. 26–43 ("The manipulation and display is based on attributes associated with the numerical data describing characteristics of the numerical data. . . . In accordance with an implementation of the present invention, a method in a data processing system having a display showing a chart is provided that receives a series of numerical values with tags indicating characteristics of the numerical values and displays the numerical values on the chart.")). As the claim language and specification describe "characteristics" as associated with tag attributes, the Court accordingly alters its preliminary construction to begin "A tag attribute." *See DeMarini Sports, Inc. v. Worth, Inc.*, 239 F.3d 1314, 1327 (Fed. Cir. 2001) ("We note that claim terms are not construed in a vacuum. Rather, to interpret claim terms we look to all of the intrinsic evidence as it pertains to the terms in question.").

The government also contested the inclusion of "additional" in the Court's preliminary construction. Tr. at 111:1–4 ("[THE GOVERNMENT]: . . . [A]nother issue with the construction is 'additional information.' Additional beyond what?"). The Court considers the numerical value itself to be information, so any information regarding the meaning, format, etc., of the numerical value is in addition to the numerical value itself. The Court accordingly retains the word "additional." *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

Implementing a modification based on clarity as well as the specification and claim language evidence, the Court alters its preliminary construction and adopts the following final construction: "Plain and ordinary meaning. Insofar as a definition is needed: A tag attribute providing additional information about a numerical value—including but not limited to describing the meaning of the numerical value." *See Phillips*, 415 F.3d at 1312–13 (quoting *Vitronics*, 90 F.3d at 1582).

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
An attribute that explains the meaning of the numerical value	Plain and ordinary meaning
Court's Final Construction	
Plain and ordinary meaning. Insofar as a definition is needed: **A tag attribute providing additional information about a numerical value—including but not limited to describing the meaning of the numerical value.**	

XIII. Disputed Claim Term #10A: "semantic tags"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
"Semantic tag" should not be construed as a stand-alone term because e-Numerate has	A "semantic tag" should be construed as "markup language tag with one or more

identified a phrase for construction. In addition, the claim language uses the term "semantic tags" in the plural. To the extent "semantic tags" is construed, e-Numerate contends that the term "semantic tags" should be construed as "markup language tags wherein the markup language tags for the one or more numerical values have more than one attribute that explains the meaning of the numerical values."	attributes that describe the meaning of the tagged value(s)." and "semantic tags" should be construed as "Markup language tags with one or more attributes that describe the meaning of the tagged value(s)."

The government disputes the construction of this claim term in the following claims: claims 1, 6, 7, 8, 11, 12, 15, 17, and 18 of the '383 Patent; claim 66 of the '384 Patent; claims 1, 2, 3, 4, 5, 11, 14, 15, 16, 19, and 20 of the '748 Patent; claim 29 of the '842 Patent; and claim 1 of the '337 Patent. RJCCS at 24–26.

The following claim limitations highlight selected usage of the term in context:

wherein the first tags and the second tags each include computer-readable *semantic tags* that describe a semantic meaning of a corresponding one of at least one of the first numerical values or the second numerical values,

'383 Patent col. 143 ll. 10–15 (emphasis added),

a plurality of computer-readable *semantic tags* that describe a semantic meaning of the data values . . . .

'748 Patent col. 141 ll. 11–12 (emphasis added).

A.   Parties' Arguments

The parties dispute whether a semantic tag needs more than one attribute within the tag, or if one attribute alone can suffice for a semantic tag. Plaintiffs argue the specification is clear more than one attribute is required, and "[t]he use of multiple attributes permits the processing recited in the claim." Pls.' Cl. Constr. Br. at 10–11 (citing '355 Patent at [57]).   The government responds the specification's statements regarding document type definitions suggest "any possible number of attributes" would be allowed. Def.'s Resp. Cl. Constr. Br. at 9 (quoting '355 Patent col. 21 ll. 31–33) (emphasis omitted) ("'[T]he DTD 702 specifies which attributes are required and which are optional for any embodiment of the DTD. Depending on design constraints, the required and optional elements may vary.'").

The government also contests plaintiffs' use of "explain" over its preferred "describe." "[T]he specification[,]" the government argues, "only discusses attributes that 'describe' the meaning or characteristic of the values." Def.'s Cl. Constr. Br. at 11–12 (citing '355 Patent at [57] ("attributes *describing the meaning* of the numbers to be attached to the numbers") (emphasis altered)). Plaintiffs respond, "The Court could choose either word in its construction

and there would be no material difference in meaning." Pl.'s Reply Cl. Constr. Br. at 4.

B. Analysis

1. The Court's Preliminary Construction

Before the *Markman* hearing, the Court considered the parties' claim construction briefs and all referenced materials in full in reaching a preliminary construction for this disputed term. The Court first noted both parties construe "semantic tags" as tags with attributes "explaining" (plaintiffs) or "describing" (the government) the meaning of the values. The claim language, however, appears to render this limitation redundant. For example, the '748 Patent claims "a plurality of computer-readable semantic tags *that describe a semantic meaning of the data values*." '748 Patent col. 141 ll. 11–12 (emphasis added). Substituting the parties' definitions with the explaining/describing limitation would provide: "a plurality of computer-readable [markup language tags with attribute(s) that explain/describe the meaning of the values] that describe a semantic meaning of the data values." The Court, therefore, did not include a requirement but rather an exemplary embodiment involving description—the language used in the specification and claims—of the tag values in its preliminary construction to avoid redundancy.

The Court then looked to a contemporary dictionary to understand the plain and ordinary meaning of the term at the time of filing. The Court did not find a contemporary dictionary definition for "semantic tag"—and accordingly did not adopt a construction of plain and ordinary meaning—but did find a definition for "semantics." Specifically, the Microsoft Computer Dictionary defines "semantics" as "In programming, the relationship between words or symbols and their intended meanings." *Semantics*, Microsoft Computer Dictionary (4th ed. 1999). Finding this definition accorded with the patents' "semantic tags," the Court incorporated this definition to clarify how a tag's attributes give meaning to its values.

The parties additionally dispute whether semantic tags require "more than one" or "one or more" attributes. The specification, however, refers to attributes in relation to data elements in the plural form. For example, the specification of the '355 Patent states, "The element tags may also include *attributes* to be applied to the data elements, a description of what sub-elements may be found within an element, and vocabulary choices for different attribute values." '355 Patent col. 20 ll. 13–16 (emphasis added); *see also id.* col. 20 ll. 56–59 ("In [an] example [of a line item], the 18 lines with an '=' are '*attributes*' of the <line item> element, and essentially, the *attributes* provide machine-readable documentation for the data values specified in the sub-element <y-values>." (emphasis added)). Additionally, the abstract of the '355 Patent states, "Generally, RDML facilitates the browsing and manipulation of numbers, as opposed to text as in HTML, and does so by requiring *attributes* describing the meaning of the numbers to be attached to the numbers." '355 Patent at [57] (emphasis added). The appendices further provide multiple attributes for each exemplary tag. *See, e.g.*, '748 Patent cols. 67–88. Although the specification uses the language "in one embodiment" or "in one implementation" when referring to multiple attributes, recent Federal Circuit precedent suggests a plural use of a claim term refers to multiple of the described items. *See Apple Inc. v. MPH Techs. Oy*, 28 F.4th 254, 261–62 (Fed. Cir. 2022) ("On claim construction, Apple claims there is a presumption that a

plural term covers one or more items. It suggests that patentees can overcome that presumption by using a word, like plurality, that clearly requires more than one item. Apple misstates the law. In accordance with common English usage, we presume a plural term refers to two or more items."). The Federal Circuit, however, has also implied context surrounding a plural claim term can allow for one or more of the described terms. *See Versa Corp. v. Ag-Bag Int'l Ltd.*, 392 F.3d 1325, 1330 (Fed. Cir. 2004) ("[I]n supporting the district court's opinion, [defendant] also argues that the claim limitation's use of 'channels' in the plural suggests that both perforated pipe and flutes are required structure since a perforated pipe does not create multiple channels. However, the use of 'channels' in the plural does not imply that multiple channels are required by the claim."). As the specification and the appendices always include multiple attributes for tags and the descriptions of semantic tags always include the plural form of "attributes," in the context of the specification and the claim language, the Court preliminarily construed semantic tags as having more than one attribute.

The Court adopted the following preliminary construction: "Markup language tags with more than one attribute including, for example, a description of a relationship between words or symbols and the intended meaning of numerical values contained within tags."

2.   The Court's Final Construction

At the *Markman* hearing, the Court provided the parties with the Court's preliminary construction. Tr. at 122:2–10. As a preliminary matter, the Court adds "tag" in front of "attribute" to clarify "attribute" is meant in the context of computer science and markup languages rather than a general context. *See* Tr. at 111:6–12 ("[PLAINTIFFS]: We understood . . . your definition, use of the word 'attribute' to be referring to the word 'attribute' in a markup language sense . . . THE COURT: A tag attribute? [PLAINTIFFS]: Yes, that's the way we understood it.").

The government disputed the limitation of "numerical" to describe values in the Court's preliminary construction. On this issue, the government makes the same arguments as it does in reference to claim term 5, "data values/values." *See* Tr. at 137:2–16 ("[THE GOVERNMENT]: . . . [I]t doesn't have to be numerical values. This goes back to the Court's claim construction of term 5 . . . ."). For the same reasons the Court agrees with the government's arguments regarding "numerical" *supra* Section VIII, the Court finds the values of "semantic tags" are not limited to numerical values and removes the "numerical" limitation from its construction.

Expanding on the argument expressed in briefing, the government argued for "one or more" rather than "more than one" attribute. An attribute, the government contended, can describe many characteristics, which could obviate the need for more than one attribute per semantic tag. *See* Tr. at 125:12–18. The government provided the example of a date of birth—a single attribute—disclosing birth month, birth year, and astrological sign—multiple characteristics. Tr. at 125:19–126:6. The government also pointed to column 20 of the '355 Patent, which has a y-axis title attribute the government asserts discloses the same information as two other attributes, magnitude and unit. Tr. at 129:22–130:16. This argument, however, misunderstands the Court's reasoning; the Court's requirement of "more than one" attributes in its preliminary construction was not based on how many characteristics are associated with a tag

value but rather on the consistent use of the plural "attributes" in the specification and the exemplary semantic tags in the appendices. Whether attributes may disclose multiple characteristics does not affect whether the claim term requires multiple attributes. The government further cited sentences from the specification it argues allow for one attribute per value: "RDML generally facilitates numerical browsing by associating numbers with attributes describing the meaning of the numbers"; and "The DTD 702 specifies which attributes are required and which are optional for any embodiment of the DTD." Tr. at 130:17–131:16 (citing '355 Patent col. 8 ll. 38–40); Tr. at 154:3–155:22 (citing '355 Patent col. 21 ll. 30–32). Plaintiffs responded they cited the first sentence frequently as support for requiring more than one attribute because the term appears in the plural form. Tr. at 132:4–12. The Court notes the government could not provide an example in the patents of a semantic tag having only one attribute, Tr. at 154:3–155:22; these sentences from the specification are amenable to an interpretation contrary to the government's interpretation because of their use of the plural form of attributes, *see* '355 Patent col. 8 ll. 38–40 ("RDML generally facilitates numerical browsing by associating numbers with *attributes* describing the meaning of the numbers.") (emphasis added), col. 21 ll. 30–32 ("The DTD 702 specifies which *attributes* are required and which are optional for any embodiment of the DTD.") (emphasis added). The government's arguments do not overcome the specification and appendices evidence, so, with agreement from plaintiffs, *see* Tr. at 128:12–129:12, the Court retains the "more than one" limitation. *See Apple Inc.*, 28 F.4th at 261–62; *DeMarini Sports, Inc. v. Worth, Inc.*, 239 F.3d 1314, 1327 (Fed. Cir. 2001) ("We note that claim terms are not construed in a vacuum. Rather, to interpret claim terms we look to all of the intrinsic evidence as it pertains to the terms in question.").

Both parties disagreed with the portion of the Court's preliminary construction relying on the Microsoft Computer Dictionary's definition of semantics. Tr. at 133:22–24 ("[THE GOVERNMENT]: . . . [The government] prefer[s] 'describes the meaning' rather than a description of a relationship between words or symbols and the intended meaning."), 136:10–13 ("[PLAINTIFFS]: . . . you could say markup language tags with more than one tag attribute that describes the meaning of the numerical values contained within the tags . . . ."). Responding to the Court's redundancy concern,[13] the government argued some of the claims do not have the potential redundancy and suggested "inelegant claiming" was to blame. Tr. at 134:10–135:5. Plaintiffs asserted "elegant variation" rather than "inelegant claiming" but agreed the repetition creates no issue. Tr. at 135:7–21. On the issue of "describing" versus "explaining," plaintiffs agreed to the government's word choice, Tr. at 136:6–13, so the Court replaces the phrase "including, for example . . . intended meaning of" with "that describes the meaning of."

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[13] The Court identified two more potential drafting issues in the patents regarding semantic tags. First, the '355 Patent states, "RDML encapsulates machine-readable documentation with the data. The data and its documentation (metadata) are used together by the data view 100 to interpret what the numbers mean, how they are to be used, and how they are to be displayed." '355 Patent col. 10 ll. 2–7. Metadata, used in this context, appeared to subsume the function of a "semantic tag." Both parties, however, agreed during the *Markman* hearing "metadata" is broader than "semantic tags" and refers to document-level data in this context. Tr. at 142:24–143:4 (plaintiffs), 143:14–144:4 (the government). Second, in view of the specification and intrinsic evidence, "level tag" in claim 5 of the '748 Patent appeared to be a typographical error and instead should be read as "level attribute." The parties agreed with this assessment during the *Markman* hearing. *See* Tr. at 140:17–23 ("[PLAINTIFFS]: Yeah, it probably should have been 'level attribute' . . . ."); *see also Pavo Sols. LLC v. Kingston Tech. Co.*, 35 F.4th 1367, 1373 (Fed. Cir. 2022) (quoting *Novo Indus., L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1357 (Fed. Cir. 2003)) ("A [trial] court may correct 'obvious minor typographical and clerical errors in patents.'")

Implementing modifications based on clarity, the specification and appendices evidence, and agreement between the parties, the Court alters its preliminary construction and adopts the following final construction: "Markup language tags with more than one tag attribute that describes the meaning of the values contained within tags." *See DeMarini Sports*, 239 F.3d at 1327 ("We note that claim terms are not construed in a vacuum. Rather, to interpret claim terms we look to all of the intrinsic evidence as it pertains to the terms in question.").

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
"Semantic tag" should not be construed as a stand-alone term because e-Numerate has identified a phrase for construction. In addition, the claim language uses the term "semantic tags" in the plural. To the extent "semantic tags" is construed, e-Numerate contends that the term "semantic tags" should be construed as "markup language tags wherein the markup language tags for the one or more numerical values have more than one attribute that explains the meaning of the numerical values."	A "semantic tag" should be construed as "markup language tag with one or more attributes that describe the meaning of the tagged value(s)." and "semantic tags" should be construed as "Markup language tags with one or more attributes that describe the meaning of the tagged value(s)."
Court's Final Construction	
Markup language tags with more than one tag attribute that describes the meaning of the values contained within tags.	

XIV. Disputed Claim Term #10B: "computer-readable semantic tags"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Markup language tags for one or more values that have more than one attribute that explains the meaning of the values	Plain and ordinary (incorporating Defendant's construction of "semantic tags")

Plaintiffs dispute the construction of this claim term in claim 1 of the '337 Patent. RJCCS at 71–74.

The following claim limitations highlight selected usage of the term in context:

receiving a user selection of one or more *computer-readable semantic tags* . . . .

'337 Patent col. 1 ll. 25–26,

mapping the one or more of the *computer-readable semantic tags* to the one or more of the original values . . . .

id. col. 1 ll. 29–30.

A. Parties' Arguments

In the briefs, the parties argued the constructions of terms 10A and 10B together, presenting no arguments unique to this term. *See* Pls.' Cl. Constr. Br. at 41; Def.'s Resp. Cl. Constr. Br. at 42; Pls.' Reply Cl. Constr. Br. at 20; Def.'s Surreply Cl. Constr. Br. at 19. As such, the Court refers to the parties' arguments section of disputed term 10A, *supra* Section XIII.A, in construing this term.

B. Analysis

At the *Markman* hearing, the parties agreed the Court's construction of disputed claim term 10A should apply to the constructions of terms 10B–10F. Tr. at 145:20–146:2. Accordingly, as agreed by the parties, the Court incorporates by reference the analysis of disputed claim term 10A and construes this term consistently with the construction of term 10A. *Id.*

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Markup language tags for one or more values that have more than one attribute that explains the meaning of the values	Plain and ordinary (incorporating Defendant's construction of "semantic tags")
Court's Final Construction	
Plain and ordinary meaning. Insofar as a definition is needed, the Court uses the construction of "semantic tags": **Markup language tags with more than one tag attribute that describes the meaning of the values contained within tags.**	

XV. Disputed Claim Term #10C: "one or more computer-readable semantic tags"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
One or more markup language tags for one or more values that have more than one attribute that explains the meaning of the values.	Plain and ordinary (incorporating Defendant's construction of "semantic tags")

Plaintiffs dispute the construction of this claim term in claim 66 of the '384 Patent. RJCCS at 44–47.

The following claim limitation highlights selected usage of the term in context:

> code stored on the at least one non-transitory computer readable medium and configured to cause the at least one hardware processor to associate the *one or more computer-readable semantic tags* with the one or more original values such that the *one or more computer-readable semantic tags* are computer-readably associated with the one or more original values.

'384 Patent col. 93 ll. 51–57.

A. Parties' Arguments

In the briefs, the parties argued the constructions of terms 10A and 10C together, presenting no arguments unique to this term. *See* Pls.' Cl. Constr. Br. at 35; Def.'s Resp. Cl. Constr. Br. at 37; Pls.' Reply Cl. Constr. Br. at 17; Def.'s Surreply Cl. Constr. Br. at 19. As such, the Court refers to the parties' arguments section of disputed term 10A, *supra* Section XIII.A, in construing this term.

B. Analysis

At the *Markman* hearing, the parties agreed the Court's construction of disputed claim term 10A should apply to the constructions of terms 10B–10F. Tr. at 145:20–146:2. Accordingly, as agreed by the parties, the Court incorporates by reference the analysis of disputed claim term 10A and construes this term consistently with the construction of term 10A. *Id.*

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
One or more markup language tags for one or more values that have more than one attribute that explains the meaning of the values.	Plain and ordinary (incorporating Defendant's construction of "semantic tags")
Court's Final Construction	
Plain and ordinary meaning. Insofar as a definition is needed, the Court uses the construction of "semantic tags": **One or more markup language tags with more than one tag attribute that describes the meaning of the values contained within tags.**	

XVI. Disputed Claim Term #10D: "computer-readable semantic tags that describe a semantic meaning of the data values"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Markup language tags for one or more data values that have more than one attribute that explains the meaning of the data values.	Plain and ordinary (incorporating Defendant's construction of "semantic tags")

Plaintiffs dispute the construction of this claim term in claims 1, 11, and 19 of the '748 Patent. RJCCS at 47–50.

The following claim limitation highlights selected usage of the term in context:

> a plurality of *computer-readable semantic tags that describe a semantic meaning of the data values* and are each computer-readably coupled to at least one of the data values . . . .

'748 Patent col. 141 ll. 12–15.

A.   Parties' Arguments

In the briefs, the parties argued the constructions of terms 10A and 10D together, presenting no arguments unique to this term. *See* Pls.' Cl. Constr. Br. at 36; Def.'s Resp. Cl. Constr. Br. at 38; Pls.' Reply Cl. Constr. Br. at 17; Def.'s Surreply Cl. Constr. Br. at 19. As such, the Court refers to the parties' arguments section of disputed term 10A, *supra* Section XIII.A, in construing this term.

B.   Analysis

At the *Markman* hearing, the parties agreed the Court's construction of disputed claim term 10A should apply to the constructions of terms 10B–10F. Tr. at 145:20–146:2. Accordingly, as agreed by the parties, the Court incorporates by reference the analysis of disputed claim term 10A and construes this term consistently with the construction of term 10A. *Id.*

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Markup language tags for one or more data values that have more than one attribute that explains the meaning of the data values.	Plain and ordinary (incorporating Defendant's construction of "semantic tags")
Court's Final Construction	
Plain and ordinary meaning. Insofar as a definition is needed, the Court uses the construction of "semantic tags": **Markup language tags with more than one tag attribute that describes the meaning of the values contained within tags.**	

XVII. Disputed Claim Term #10E: "computer-readable semantic tags that describe a semantic meaning of the data values and are each computer-readably coupled to at least one of the data values/the at least portion of the original values"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Markup language tags for one or more data values that have more than one attribute that explains the meaning of the data values.	Plain and ordinary (incorporating Defendant's construction of "semantic tags")

Plaintiffs dispute the construction of this claim term in claims 1, 11, and 19 of the '748 Patent. RJCCS at 47–50.

The following claim limitations highlight selected usage of the term in context:

a plurality of *computer-readable semantic tags that describe a semantic meaning of the data values and are each computer-readably coupled to at least one of the data values*[,]

'748 Patent col. 141 ll. 12–15,

> wherein at least some of the *computer-readable semantic tags are each computer-readably coupled to the at least portion of the original values* of at least one computer-readable XML-complaint data document . . . .

id. col. 145 ll. 52–55.

B.   Parties' Arguments

In the briefs, the parties argued the constructions of terms 10A and 10E together, presenting no arguments unique to this term. *See* Pls.' Cl. Constr. Br. at 36; Def.'s Resp. Cl. Constr. Br. at 38; Pls.' Reply Cl. Constr. Br. at 17; Def.'s Surreply Cl. Constr. Br. at 19. As such, the Court refers to the parties' arguments section of disputed term 10A, *supra* Section XIII.A, in construing this term.

B.   Analysis

At the *Markman* hearing, the parties agreed the Court's construction of disputed claim term 10A should apply to the constructions of terms 10B–10F. Tr. at 145:20–146:2. Accordingly, as agreed by the parties, the Court incorporates by reference the analysis of disputed claim term 10A and construes this term consistently with the construction of term 10A. *Id.*

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Markup language tags for one or more data values that have more than one attribute that explains the meaning of the data values.	Plain and ordinary (incorporating Defendant's construction of "semantic tags")
Court's Final Construction	
Plain and ordinary meaning. Insofar as a definition is needed, the Court uses the construction of "semantic tags": **Markup language tags with more than one tag attribute that describes the meaning of the values contained within tags.**	

XVIII. Disputed Claim Term #10F: "plurality of computer-readable semantic tags that describe a semantic meaning of the data values"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
More than one markup language tags for one or more data values that have more than one attribute that explains the meaning of the data values	Plain and ordinary (incorporating Defendant's construction of "semantic tags" below)

Plaintiffs dispute the construction of this claim term in claim 29 of the '842 Patent. RJCCS at 64–67.

The following claim limitations highlight selected usage of the term in context:

a *plurality of computer-readable semantic tags that describe a semantic meaning of the data values* and are each computer-readably coupled to at least one of the data values . . . .

'842 Patent col. 83 ll. 40–41.

A. Parties' Arguments

In the briefs, the parties argued the constructions of terms 10A and 10F together, presenting no arguments unique to this term. *See* Pls.' Cl. Constr. Br. at 39–40; Def.'s Resp. Cl. Constr. Br. at 41; Pls.' Reply Cl. Constr. Br. at 19; Def.'s Surreply Cl. Constr. Br. at 19. As such, the Court refers to the parties' arguments section of disputed term 10A, *supra* Section XIII.A, in construing this term.

B. Analysis

1. The Court's Preliminary Construction

Before the *Markman* hearing, the Court considered the parties' claim construction briefs and all referenced materials in full in reaching a preliminary construction for this disputed term. Relying on Federal Circuit precedent, the Court preliminarily construed "plurality" to mean "two or more." *Dayco Prod., Inc. v. Total Containment, Inc.*, 258 F.3d 1317, 1327–28 (Fed. Cir. 2001) ("In accordance with standard dictionary definitions, we have held that 'plurality,' when used in a claim, refers to two or more items, absent some indication to the contrary."); *see also York Prods., Inc. v. Cent. Tractor Farm & Family Ctr.*, 99 F.3d 1568, 1575 (Fed. Cir. 1996) ("The term means, simply, 'the state of being plural.'"). Incorporating its preliminary construction of "semantic tags," the Court accordingly adopted the following preliminary construction: "Plain and ordinary meaning. Insofar as a definition is needed, the Court incorporates its preliminary construction of 'semantic tags': Two or more markup language tags with more than one attribute including, for example, a description of a relationship between words or symbols and the intended meaning of numerical values contained within tags."

2. The Court's Final Construction

At the *Markman* hearing, the parties agreed the Court's construction of disputed claim term 10A should apply to the constructions of terms 10B–10F. Tr. at 145:20–146:2. The parties additionally agreed Federal Circuit caselaw requires a construction of "two or more" for "plurality," focusing on the "markup language tags." Tr. at 151:3–21. Accordingly, as agreed by the parties, the Court incorporates by reference the analysis of disputed claim term 10A and construes this term consistently with the construction of term 10A and caselaw on "plurality." Tr. at 145:20–146:2; *see Dayco Prod.*, 258 F.3d at 1327–28.

Plaintiffs' Proposed Construction	Defendant's Proposed Construction

More than one markup language tags for one or more data values that have more than one attribute that explains the meaning of the data values	Plain and ordinary (incorporating Defendant's construction of "semantic tags")
Court's Final Construction	
Plain and ordinary meaning. Insofar as a definition is needed, the Court uses the construction of "semantic tags": **Two or more markup language tags with more than one tag attribute that describes the meaning of the values contained within tags.**	

XIX.   Disputed Claim Term #10G: "tags reflecting characteristics of the numerical values"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Markup language tags wherein the markup language tags for the one or more numerical values have more than one attribute that explains the meaning of the numerical values	Plain and ordinary meaning (incorporating Defendant's construction of "[]tags") Defendant maintains that . . . "tags" [should be construed] as "markup language tags." Further, a markup language is "a language that uses tags to define elements within a document. Examples of markup languages include HTML, XML and XBRL." To the extent this term is construed, Defendant proposes: "Markup language tags wherein the markup language tags for the one or more numerical values have one or more attributes that describe the meaning of the numerical values."

Plaintiffs dispute the construction of this claim term in claims 1, 10, 17, 26, and 27 of the '816 Patent. RJCCS at 8.

The following claim limitation highlights selected usage of the term in context:

> receiving a first markup document and a second markup document, both the first markup document and the second markup document including numerical values and *tags reflecting characteristics of the numerical values . . . .*

'816 Patent col. 55 ll. 8–12.

A.   Parties' Arguments

Plaintiffs highlight the same issues raised under other disputed claim terms: whether tags require multiple attributes and whether the government inappropriately inserts a construction of "markup language" into this term. *See* Pls.' Cl. Constr. Br. at 19–20. The parties do not raise

any further issues in briefing. *See* Def.'s Resp. Cl. Constr. Br. at 19; Pls.' Reply Cl. Constr. Br. at 9; Def.'s Surreply Cl. Constr. Br. at 10.

B.   Analysis

1.   The Court's Preliminary Construction

Before the *Markman* hearing, the Court considered the parties' claim construction briefs and all referenced materials in full in reaching a preliminary construction for this disputed term. The Court preliminarily found "semantic tags" does not have a plain and ordinary meaning, *see supra* Section XIII.B.1, but preliminarily found "tags reflecting characteristics of the numerical values" does have a plain and ordinary meaning because the composite terms were known in the art at the time. The Court understood from the 7 October Status Conference both parties advocated construing this term the same as other tag-related terms, *see* SC Tr. at 82:13–20 ("THE COURT: So is there agreement between 'tags indicating characteristics of the numerical values' and 'computer-readable semantic tags'? [PLAINTIFFS]: From our standpoint, they mean the same thing. THE COURT: . . . [Does the government] disagree? [THE GOVERNMENT]: No, I believe for those we point to the same construction."), so the Court adopted the following preliminary construction, incorporating its preliminary construction of "semantic tags": "Plain and ordinary meaning (incorporating the Court's preliminary construction of 'semantic tags'). Insofar as a definition is needed: Markup language tags with more than one attribute including, for example, a description of a relationship between words or symbols and the intended meaning of numerical values contained within tags."

2.   The Court's Final Construction

At the *Markman* hearing, the Court provided the parties with an update to the Court's preliminary construction based on arguments made during the hearing for term 10A, "semantic tags": "markup language tags with more than one tag attribute that describes the meaning of the values contained within tags." Tr. at 151:22–152:2.

Plaintiffs' only objection to the Court's updated construction was not matching the claim term language of "*numerical* value." Tr. at 152:10–18. Although the Court finds "semantic tags" are not limited to "numerical values," *see supra* Section XIII.B.2, the Court finds the limitation "numerical values" is justified here and for the following claim terms where the terms themselves contain the phrase "numerical values." The Court accordingly alters its construction to include the phrase "numerical values" and plaintiffs agree to the construction with this modification. *See* Tr. at 152:23–153:2.

The government raised the previously discussed issue regarding "one or more" rather than "more than one" attribute. Tr. at 153:8–9. For the same reasons the Court agrees with plaintiffs' arguments regarding "more than one" *supra* Section XIII.B, the Court retains the "more than one" limitation in its construction.

In a reversal from its position in briefing and the 7 October Status Conference, the government argued this term should be construed differently from "semantic tags" and attempted

to disavow the final phrase of its alternate construction, "that describe the meaning of the numerical values." *Compare* RJCCS at 8–9 ("To the extent this term is construed, Defendant proposes: 'Markup language tags wherein the markup language tags for the one or more numerical values have one or more attributes that describe the meaning of the numerical values.'"), *with* Tr. at 156:7–158:7 ("[THE GOVERNMENT]: . . . '[T]ags reflecting characteristics of numerical value' need not be 'semantic tags.' It could . . . also cover formatting and display."). The government, however, has already conceded this term has the same meaning as semantic tags—describing the meaning of numerical values. SC Tr. at 82:13–20 ("THE COURT: So is there agreement between 'tags indicating characteristics of the numerical values' and 'computer-readable semantic tags'? [PLAINTIFFS]: From our standpoint, they mean the same thing. THE COURT: . . . [Does the government] disagree? [THE GOVERNMENT]: No, I believe for those we point to the same construction."); RJCCS at 8–9 ("To the extent this term is construed, Defendant proposes: 'Markup language tags wherein the markup language tags for the one or more numerical values have one or more attributes that describe the meaning of the numerical values.'"). The Court therefore declines to construe this term differently from term 10A, with the exception of the modification to accommodate the claim language "numerical values." *See In re Katz Interactive Call Processing Patent Litig.*, 639 F.3d 1303, 1325 (Fed. Cir. 2011) (finding a court should "ordinarily interpret claims consistently across patents having the same specification"); *see also Callicrate v. Wadsworth Mfg., Inc.*, 427 F.3d 1361, 1369 (Fed. Cir. 2005) (applying construction of term based on first patent to same term of different patent where the two patents were related and had identical specifications).

Implementing modifications based on the claim language and the final construction of term 10A, *see supra* Section XIII.B.2, the Court alters its preliminary construction and adopts the following final construction: "Plain and ordinary meaning. Insofar as a definition is needed: Markup language tags with more than one tag attribute that describes the meaning of the numerical values contained within tags." *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Markup language tags wherein the markup language tags for the one or more numerical values have more than one attribute that explains the meaning of the numerical values	Plain and ordinary meaning (incorporating Defendant's construction of "[]tags") Defendant maintains that . . . "tags" [should be construed] as "markup language tags." Further, a markup language is "a language that uses tags to define elements within a document. Examples of markup languages include HTML, XML and XBRL." To the extent this term is construed, Defendant proposes: "Markup language tags wherein the markup language tags for the one or more numerical values have one or more attributes that describe the meaning of the numerical values."
Court's Final Construction	

> Plain and ordinary meaning. Insofar as a definition is needed:
>
> **Markup language tags with more than one tag attribute that describes the meaning of the numerical values contained within tags.**

XX. Disputed Claim Term #10H: "first tags reflecting characteristics of the first numerical values"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Markup language tags wherein the markup language tags for the one or more numerical values have more than one attribute that explains the meaning of the numerical values	Plain and ordinary (incorporating Defendant's construction of . . . "tags"). Defendant maintains that . . . "tags" should be construed as "markup language tags." Further, a markup language is "a language that uses tags to define elements within a document. Examples of markup languages include HTML, XML and XBRL." To the extent the Court construes the entire term, Defendant proposes "Markup language tags wherein the markup language tags for the one or more numerical values have one or more attributes that describe the meaning of the numerical values."

Plaintiffs dispute the construction of this claim term in claims 1, 17, and 18 of the '383 Patent. RJCCS at 17–19.

The following claim limitation highlights selected usage of the term in context:

code for identifying a first markup document including first numerical values and *first tags reflecting first characteristics of the first numerical values* associated with a first unit of measure, and a second markup document including second numerical values and second tags reflecting second characteristics of the second numerical values associated with a second unit of measure, wherein the first tags and the second tags each include computer-readable semantic tags that describe a semantic meaning of a corresponding one of at least one of the first numerical values or the second numerical values . . . .

'383 Patent col. 143 ll. 4–14.

A. Parties' Arguments

In the briefs, the parties argued the constructions of terms 10G and 10H together, presenting no arguments unique to this term. *See* Pls.' Cl. Constr. Br. at 23; Def.'s Resp. Cl. Constr. Br. at 23; Pls.' Reply Cl. Constr. Br. at 11; Def.'s Surreply Cl. Constr. Br. at 12. As such, the Court refers to the parties' arguments section of disputed term 10G, *supra* Section

XIX.A, in construing this term.

B.   Analysis

At the *Markman* hearing, plaintiffs agreed to the Court's updated construction based on arguments made for other tag-related terms: "First set of markup language tags with more than one tag attribute that describes the meaning of the numerical values contained within the first tags." Tr. at 162:6–13 ("[PLAINTIFFS]: . . . [T]hat sounds correct."). The government had no further argument on this term. Tr. at 162:25–163:3 ("[THE GOVERNMENT]: . . . [W]e don't have any further argument beyond— THE COURT: So it's the same argument as 10G? [THE GOVERNMENT]: Right."). Accordingly, the Court incorporates by reference the analysis of disputed claim term 10G and construes this term consistently with the construction of term 10G. Tr. at 162:2–163:3.

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Markup language tags wherein the markup language tags for the one or more numerical values have more than one attribute that explains the meaning of the numerical values	Plain and ordinary (incorporating Defendant's construction of . . . "tags"). Defendant maintains that . . . "tags" should be construed as "markup language tags." Further, a markup language is "a language that uses tags to define elements within a document. Examples of markup languages include HTML, XML and XBRL." To the extent the Court construes the entire term, Defendant proposes "Markup language tags wherein the markup language tags for the one or more numerical values have one or more attributes that describe the meaning of the numerical values."
Court's Final Construction	
Plain and ordinary meaning. Insofar as a definition is needed, the Court uses the construction of "tags reflecting characteristics of the numerical values": **First set of markup language tags with more than one tag attribute that describes the meaning of the numerical values contained within the first tags.**	

XXI.   Disputed Claim Term #10I: "second tags reflecting characteristics of the second numerical values"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Markup language tags wherein the markup language tags for the one or more numerical values have more than one attribute that explains the meaning of the numerical values	Plain and ordinary (incorporating Defendant's construction of . . . "tags"). Defendant maintains that . . . "tags" should be construed as "markup language tags." Further, a markup language is "a language that uses tags to define elements within a document.

	Examples of markup languages include HTML, XML and XBRL." To the extent the Court construes the entire term, Defendant proposes "Markup language tags wherein the markup language tags for the one or more numerical values have one or more attributes that describe the meaning of the numerical values."

Plaintiffs dispute the construction of this claim term in claims 1, 17, and 18 of the '383 Patent. RJCCS at 20–21.

The following claim limitation highlights selected usage of the term in context:

code for identifying a first markup document including first numerical values and first tags reflecting first characteristics of the first numerical values associated with a first unit of measure, and a second markup document including second numerical values and *second tags reflecting second characteristics of the second numerical values* associated with a second unit of measure, wherein the first tags and the second tags each include computer-readable semantic tags that describe a semantic meaning of a corresponding one of at least one of the first numerical values or the second numerical values . . . .

'383 Patent col. 143 ll. 4–14.

A.   Parties' Arguments

In the briefs, the parties argued the constructions of terms 10G and 10I together, presenting no arguments unique to this term. *See* Pls.' Cl. Constr. Br. at 24; Def.'s Resp. Cl. Constr. Br. at 23; Pls.' Reply Cl. Constr. Br. at 11; Def.'s Surreply Cl. Constr. Br. at 12. As such, the Court refers to the parties' arguments section of disputed term 10G, *supra* Section XIX.A, in construing this term.

B.   Analysis

At the *Markman* hearing, plaintiffs agreed to the Court's updated construction based on arguments made for other tag-related terms: "Second set of markup language tags with more than one tag attribute that describes the meaning of the numerical values contained within the second tags." Tr. at 163:4–11 ("[PLAINTIFFS]: I believe that's correct."). The government had no further argument on this term. Tr. at 163:12–14 ("[THE GOVERNMENT]: . . . [W]e would have the same objection we have for 10G."). Accordingly, the Court incorporates by reference the analysis of disputed claim term 10G and construes this term consistently with the construction of term 10G. Tr. at 163:4–14.

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Markup language tags wherein the markup	Plain and ordinary (incorporating Defendant's

language tags for the one or more numerical values have more than one attribute that explains the meaning of the numerical values	construction of . . . "tags"). Defendant maintains that . . . "tags" should be construed as "markup language tags." Further, a markup language is "a language that uses tags to define elements within a document. Examples of markup languages include HTML, XML and XBRL." To the extent the Court construes the entire term, Defendant proposes "Markup language tags wherein the markup language tags for the one or more numerical values have one or more attributes that describe the meaning of the numerical values."
Court's Preliminary Construction	
Plain and ordinary meaning. Insofar as a definition is needed, the Court uses the construction of "tags reflecting characteristics of the numerical values": **Second set of markup language tags with more than one tag attribute that describes the meaning of the numerical values contained within the second tags.**	

XXII. Disputed Claim Term #10J: "series of numerical values having tags indicating characteristics of the numerical values"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
A set of one or more numerical values having markup language tags wherein the markup language tags for the one or more numerical values have more than one attribute that explains the meaning of the numerical values	Plain and ordinary meaning (incorporating Defendant's construction of "[]tags"). Defendant maintains that the term . . . "tags" [should be construed] as "markup language tags." Alternatively, to the extent the term is construed as a whole, Defendant proposes "A set of one or more numerical values having markup language tags wherein the markup language tags for the one or more numerical values have one or more attributes that describe the meaning of the one or more numerical values."

Plaintiffs dispute the construction of this claim term in claims 1, 27, 28, and 54 of the '355 Patent. RJCCS at 2–3.

The following claim limitation highlights selected usage of the term in context:

A computer-implemented method of processing tagged numerical data, the method comprising: receiving a *series of numerical values having tags indicating characteristics of the numerical values* . . . .

'355 Patent col. 56 ll. 34–37.

A.   Parties' Arguments

The parties' briefs highlight the same issues raised under other disputed claim terms: whether tags require multiple attributes and whether characteristics provide information relating to only meaning or also to format. *See* Pls.' Cl. Constr. Br. at 10–13; Def.'s Resp. Cl. Constr. Br. at 7–12; Pls.' Reply Cl. Constr. Br. at 2–4; Def.'s Surreply Cl. Constr. Br. at 1–4; *see supra* Section XIX.A.

B.   Analysis

At the *Markman* hearing, plaintiffs agreed to the Court's updated construction based on arguments made for other tag-related terms: "Set of numerical values associated with markup language tags with more than one tag attribute that describes the meaning of the numerical values contained within tags." Tr. at 163:15–164:11 ("[PLAINTIFFS]: . . . [T]hat sounds correct . . . ."). The government had no further argument on this term. Tr. at 164:12–14 ("THE COURT: . . . [S]ame objections as 10G? [THE GOVERNMENT]: Right."). Accordingly, the Court incorporates by reference the analysis of disputed claim term 10G and construes this term consistently with the construction of term 10G. Tr. at 163:15–164:14.

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
A set of one or more numerical values having markup language tags wherein the markup language tags for the one or more numerical values have more than one attribute that explains the meaning of the numerical values	Plain and ordinary meaning (incorporating Defendant's construction of "[]tags"). Defendant maintains that the term . . . "tags" [should be construed] as "markup language tags." Alternatively, to the extent the term is construed as a whole, Defendant proposes "A set of one or more numerical values having markup language tags wherein the markup language tags for the one or more numerical values have one or more attributes that describe the meaning of the one or more numerical values."
Court's Final Construction	
Plain and ordinary meaning. Insofar as a definition is needed, the Court uses the construction of "tags reflecting characteristics of the numerical values": **Set of numerical values associated with markup language tags with more than one tag attribute that describes the meaning of the numerical values contained within tags.**	

XXIII. Disputed Claim Term #11: "wherein the first tags and the second tags each include computer-readable semantic tags that describe a semantic meaning of a corresponding one of at least one of the first numerical values or the second numerical values"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction

Markup language tags wherein the markup language tags for the one or more numerical values have more than one attribute that explains the meaning of the numerical values	Plain and ordinary (incorporating Defendant's constructions of "[]tags" and "[]semantic tags") . . . . To the extent the Court construes the term as a whole, Defendant proposes "Markup language tags wherein the markup language tags for the one or more numerical values have one or more attributes that describe the meaning of the numerical values."

Plaintiffs dispute the construction of this claim term in claims 1, 17, and 18 of the '383 Patent. RJCCS at 22–24.

The following claim limitations highlight selected usage of the term in context:

code for identifying a first markup document including first numerical values and first tags reflecting first characteristics of the first numerical values associated with a first unit of measure, and a second markup document including second numerical values and second tags reflecting second characteristics of the second numerical values associated with a second unit of measure, *wherein the first tags and the second tags each include computer-readable semantic tags that describe a semantic meaning of a corresponding one of at least one of the first numerical values or the second numerical values . . . .*

'383 Patent col. 143 ll. 4–14.

A.   Parties' Arguments

In the briefs, the parties argued the constructions of terms 10A and 11 together, generally presenting no arguments unique to this term. *See* Pls.' Cl. Constr. Br. at 24–25; Def.'s Resp. Cl. Constr. Br. at 23–24; Pls.' Reply Cl. Constr. Br. at 11. As such, the Court refers to the parties' arguments section of disputed term 10A, *supra* Section XIII.A, in construing this term. The government raises one additional argument in its surreply brief: plaintiffs' use of "each include" is ambiguous because it could refer to "(1) the collective plural 'first tags' and the collective plural 'second tags'; or (2) each individual single tag from the collection of 'first tags' and the collection of 'second tags.'" Def.'s Surreply Cl. Constr. Br. at 12.

B.   Analysis

1.   The Court's Preliminary Construction

Before the *Markman* hearing, the Court considered the parties' claim construction briefs and all referenced materials in full in reaching a preliminary construction for this disputed term. The Court looked to the surrounding claim language and found construing "include" in this claim term to mean "comprise" could create redundancy because the claim already describes the first and second tags as "reflecting [first/second] characteristics of the [first/second] numerical

values," which the Court preliminarily construed as plain and ordinary meaning, incorporating the preliminary construction of "semantic tags" based on the parties' arguments. '383 Patent col. 143 ll. 4–14; *see supra* Sections XIX.B.1, XX, XXI. Instead of construing the clauses introducing the first and second tags and the wherein clause as *both* incorporating the preliminary construction of "semantic tags" with minimal alteration, the Court preliminarily construed "include" in the wherein clause as adding hierarchy to the tags through nesting, avoiding redundancy. *See* '383 Patent col. 143 ll. 4–14 ("first tags reflecting first characteristics of the first numerical values . . . and second tags reflecting second characteristics of the second numerical values . . . wherein the first tags and the second tags each include computer-readable semantic tags that describe a semantic meaning of a corresponding one of at least one of the first numerical values or the second numerical values"); *DeMarini Sports, Inc. v. Worth, Inc.*, 239 F.3d 1314, 1327 (Fed. Cir. 2001) ("We note that claim terms are not construed in a vacuum. Rather, to interpret claim terms we look to all of the intrinsic evidence as it pertains to the terms in question."). The Court accordingly adopted the following preliminary construction, incorporating its preliminary construction for "semantic tags": "Plain and ordinary meaning incorporating the Court's preliminary construction of 'semantic tags.' Insofar as a definition is needed: First tags and second tags, within each are nested markup language tags with more than one attribute, including for example, a description of a relationship between words or symbols and the intended meaning of numerical values contained within tags."

2. The Court's Final Construction

At the *Markman* hearing, the Court provided the parties with the Court's preliminary construction. Tr. at 164:15–25. Both parties requested the Court remove the clause regarding nesting and the comma preceding it—", within each are nested markup language tags." Tr. at 165:5–17 (plaintiffs), 166:1–4 (the government). In addition to modifications based on the parties' arguments from other tag-related terms, the government proposed changing "within tags" to "within first and second tags" for added clarity; plaintiffs stated this change was not necessary but did not disagree with it. Tr. at 167:2–168:8. With these modifications, plaintiffs agreed to the Court's construction, and the government objected only to "more than one" rather than "one or more" attributes as they did for other tag-related terms. Tr. at 168:2–13 ("THE COURT: 'First markup language tags and second markup language tags with more than one tag attribute that describes the meaning of the numerical values contained within first and second tags.' Is that correct? [PLAINTIFFS]: Yeah, I believe that's correct, and I think you could have just said 'within tags.' . . . [THE GOVERNMENT]: . . . [W]e still object to the 'more than one attribute.'"). For the same reasons the Court agrees with plaintiffs' arguments regarding "more than one" *supra* Section XIII.B, the Court retains the "more than one" limitation in its construction.

Implementing modifications based on clarity and agreement between the parties, the Court alters its preliminary construction and adopts the following final construction, incorporating the final construction of "tags reflecting characteristics of the numerical values": "Plain and ordinary meaning. Insofar as a definition is needed, the Court uses the construction of 'tags reflecting characteristics of the numerical values': First markup language tags and second markup language tags with more than one tag attribute that describes the meaning of the numerical values contained within first and second tags."

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Markup language tags wherein the markup language tags for the one or more numerical values have more than one attribute that explains the meaning of the numerical values	Plain and ordinary (incorporating Defendant's constructions of "[]tags" and "[]semantic tags") Defendant maintains that "tag[s]" and "semantic tag[s]" should be construed. To the extent the Court construes the term as a whole, Defendant proposes "Markup language tags wherein the markup language tags for the one or more numerical values have one or more attributes that describe the meaning of the numerical values."
Court's Final Construction	
Plain and ordinary meaning. Insofar as a definition is needed, the Court uses the construction of "tags reflecting characteristics of the numerical values": **First markup language tags and second markup language tags with more than one tag attribute that describes the meaning of the numerical values contained within first and second tags.**	

XXIV. Disputed Claim Term #12: "wherein the characteristics indicate that the numerical values of the first markup document differ in format from the numerical values of the second markup document"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
One or more attributes for the numerical values in the first markup document are different from one or more attributes for the numerical values in the second markup document	Plain and ordinary meaning

Plaintiffs dispute the construction of this claim term in claims 1, 10, 17, 26, and 27 of the '816 Patent. RJCCS at 10.

The following claim limitation highlights selected usage of the term in context:

receiving a first markup document and a second markup document, both the first markup document and the second markup document including numerical values and tags reflecting characteristics of the numerical values, *wherein the characteristics indicate that the numerical values of the first markup document differ in format from the numerical values of the second markup document . . . .*

'816 Patent col. 55 ll. 8–16.

A.   Parties' Arguments

Plaintiffs argue the '816 Patent teaches "numerical values differ in format when their attributes are different." Pls.' Cl. Constr. Br. at 20 (citing '816 Patent col. 8 ll. 28–43 ("After receiving any requested sets of numerical data, the data viewer may automatically transform and combine them even if they are in different formats (i.e., one in thousands of U.S. dollars and another in hundreds of French francs) on a single graphical display without requiring the user to make manual adjustments. The user may then make single-click adjustments to the display (e.g., adjust for inflation, currencies, time periods, number precision, etc.) to see different aspects of the received information. RDML generally facilitates numerical browsing by associating numbers with attributes describing the meaning of the numbers.")). The government responds "there are attributes not directed to the format of the number[,]" so plaintiffs broaden the scope of the claims by considering any change in attribute to be a change in format. Def.'s Resp. Cl. Constr. Br. at 19–20. Further, the government argues the two documents may have different attributes which conflicts with plaintiffs' construction. *Id.* at 20.

B.   Analysis

1.   The Court's Preliminary Construction

Before the *Markman* hearing, the Court considered the parties' claim construction briefs and all referenced materials in full in reaching a preliminary construction for this disputed term. The Court looked to the specification for guidance on how characteristics "differ in format." Figure 10 of the '816 Patent, reproduced below, shows the transformation process to which this claim term relates.
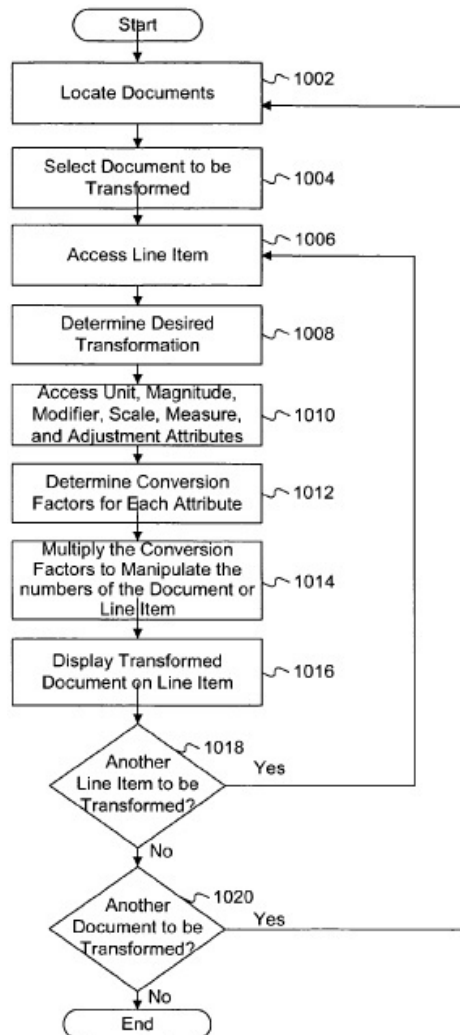
'816 Patent fig.10.

The specification, describing Figure 10, instructs:

> The data viewer . . . *accesses the unit, magnitude, modifier, scale, measure and adjustment attributes* of the document or line item to be transformed (step 1010). Using these attributes, the data viewer . . . determines the conversion factors, if any, for each (step 1012). These conversion factors may be stored locally or retrieved online over a network . . . . The data viewer . . . then multiplies the conversion factors to transform the numerical data into the desired display (step 1014) and displays the transformed line item or document (step 1016). . . . [I]f more than one document . . . needs to be transformed, the steps may be repeated for each document. In this way, documents . . . having different numerical sets may be automatically manipulated for simultaneous display or quick transformation of display format without human intervention. The system automatically resolves conflicts between different *documents in different formats* by transforming them into one desired form.

Id. col. 26 ll. 11–30 (emphasis added). The Court found Figure 10 and its explanation instructive in understanding the types of attributes accessed for transformations when documents "differ in format." *Id.* The Court accordingly adopted the following preliminary construction: "Plain and ordinary meaning. Insofar as a definition is needed: In two markup documents containing characteristics of numerical values, the characteristics are different in format, exemplified by attributes such as magnitude, scale, modifier, unit, or measure which distinguish the representation of numerical values from one markup document to the other markup document."

2. The Court's Final Construction

At the *Markman* hearing, the Court provided the parties with the Court's preliminary construction. Tr. at 168:15–22. The parties agreed the second instance of "characteristics" in the Court's preliminary construction should be "one or more characteristics" to clarify the minimum number of different characteristics between the two documents is one rather than two. Tr. at 170:15–21 (the government), 170:23–25 (plaintiffs). The Court accordingly alters its preliminary construction to clarify a minimum of one characteristic must differ in format.

Implementing a modification based on clarity as well as agreement by the parties, the Court alters its preliminary construction and adopts the following final construction: "Plain and ordinary meaning. Insofar as a definition is needed: In two markup documents containing characteristics of numerical values where one or more of the characteristics are different in format, exemplified by attributes such as magnitude, scale, modifier, unit, or measure which distinguish the representation of numerical values from one markup document to the other markup document." Tr. at 173:7–24; *see Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
One or more attributes for the numerical values in the first markup document are different from one or more attributes for the numerical values in the second markup document	Plain and ordinary meaning
Court's Final Construction	
Plain and ordinary meaning. Insofar as a definition is needed: **In two markup documents containing characteristics of numerical values where one or more of the characteristics are different in format, exemplified by attributes such as magnitude, scale, modifier, unit, or measure which distinguish the representation of numerical values from one markup document to the other markup document.**	

XXV. Disputed Claim Term #13A: "automatically transforming/transforms the numerical values of at least one of the first markup document and the second markup document, so that the numerical values of the first markup document and the second markup document have a common format"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction

Automatically converting/converts at least a portion of the first or second numerical values and one or more attributes for the numerical values in the first or second markup document to create new numerical values and common attributes for the numerical values	Plain and ordinary meaning.

Plaintiffs dispute the construction of this claim term in claims 1, 10, 17, 26, and 27 of the '816 Patent. RJCCS at 10–11.

The following claim limitation highlights selected usage of the term in context:

receiving a first markup document and a second markup document, both the first markup document and the second markup document including numerical values and tags reflecting characteristics of the numerical values, wherein the characteristics indicate that the numerical values of the first markup document differ in format from the numerical values of the second markup document; *automatically transforming the numerical values of at least one of the first markup document and the second markup document, so that the numerical values of the first markup document and the second markup document have a common format* . . . .

'816 Patent col. 55 ll. 8–21.

A.   Parties' Arguments

Plaintiffs argue the specification supports the premise the numerical values themselves are changed as part of the transformation: "[T]he method determines conversion factors for the magnitude, scale, modifier, units, measure, adjustment and aggregation tags to accomplish the transformation to the new characteristics and *multiplies the set of numerical values* by the determined conversion factors to transform the set of numerical values to reflect the new characteristics." Pls.' Cl. Constr. Br. at 21 (quoting '816 Patent col. 4 ll. 22–28) (emphasis altered) (internal quotations omitted). The government, however, does not object to requiring a change in the numerical values but rather to requiring a change in the attributes. Def.'s Resp. Cl. Constr. Br. at 21. Further, the government asserts plaintiffs have no support for the broadening clause "at least a portion of" in their proposed construction, and the plain reading of the claim language "requires transforming no less than all of the numerical values." [14] *Id.* at 20–21. Plaintiffs reply by stating the claim language does not use the word "all," so not all of the numerical values must be transformed. Pls.' Reply Cl. Constr. Br. at 10.

B.   Analysis

1.   The Court's Preliminary Construction

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[14] The government also raises an indefiniteness issue with plaintiffs' proposed construction. Def.'s Resp. Cl. Constr. Br. at 21–22. The Court does not address the indefiniteness argument at this time as it construes only disputed terms not raising indefiniteness arguments in this Opinion and Order.

Before the *Markman* hearing, the Court considered the parties' claim construction briefs and all referenced materials in full in reaching a preliminary construction for this disputed term. The Court looked to the specification for explanation of the transformation process. As Figure 10, *see supra* Section XXIV.B.1, and its explanation in the specification show, transformation involves applying "conversion factors" based on certain kinds of attributes to "numerical values" so that the documents are in "one desired form." '816 Patent fig.10, col. 26 ll. 11–30. Incorporating language from the specification, the Court accordingly adopted the following preliminary construction: "Plain and ordinary meaning. Insofar as a definition is needed: Automatically converting/converts the numerical values, contained in at least two markup documents, using attributes (such as unit, magnitude, modifier, scale, measure, and adjustment) and conversion factors to one common format of numerical values."

2. The Court's Final Construction

At the *Markman* hearing, the Court provided the parties with the Court's preliminary construction. Tr. at 173:25–174:9. The parties agreed to the Court's construction with several modifications to clarify singular versus plural: "at least *one of two* markup documents"; "*one or more* attributes"; and "*one or more* conversion factors." Tr. at 174:11–177:1.

Implementing modifications based on agreement by the parties, the Court alters its preliminary construction and adopts the following final construction: "Plain and ordinary meaning. Insofar as a definition is needed: Automatically converting/converts the numerical values, contained in at least one of two markup documents, using one or more attributes (such as unit, magnitude, modifier, scale, measure, and adjustment) and one or more conversion factors to one common format of numerical values." *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Automatically converting/converts at least a portion of the first or second numerical values and one or more attributes for the numerical values in the first or second markup document to create new numerical values and common attributes for the numerical values	Plain and ordinary meaning.
Court's Preliminary Construction	
Plain and ordinary meaning. Insofar as a definition is needed: **Automatically converting/converts the numerical values, contained in at least one of two markup documents, using one or more attributes (such as unit, magnitude, modifier, scale, measure, and adjustment) and one or more conversion factors to one common format of numerical values.**	

XXVI. Disputed Claim Term #13B: "automatic transformation of at least a portion of the first or second numerical values of at least one of the first markup document or the second

markup document, so that at least some of the first numerical values of the first markup document and at least some of the second numerical values of the second markup document have a common unit of measure"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Automatically converting at least a portion of the first or second numerical values and one or more attributes for the numerical values in the first or second markup document to create new numerical values and common attributes reflecting a unit of measure for the numerical values	Plain and ordinary (incorporating the parties' agreed construction of "markup document" as "a document that contains markup language tags.")

Plaintiffs dispute the construction of this claim term in claims 1 and 17 of the '383 Patent. RJCCS at 27–28.

The following claim limitation highlights selected usage of the term in context:

code for causing *automatic transformation of at least a portion of the first or second numerical values of at least one of the first markup document or the second markup document, so that at least some of the first numerical values of the first markup document and at least some of the second numerical values of the second markup document have a common unit of measure . . . .*

'383 Patent col. 143 ll. 21–27.

A. Parties' Arguments

In the briefs, the parties argued the constructions of terms 13A and 13B together, presenting no arguments unique to this term. *See* Pls.' Cl. Constr. Br. at 25; Def.'s Resp. Cl. Constr. Br. at 24; Pls.' Reply Cl. Constr. Br. at 11; Def.'s Surreply Cl. Constr. Br. at 13. As such, the Court refers to the parties' arguments section of disputed term 13A, *supra* Section XXV.A, in construing this term.

B. Analysis

At the *Markman* hearing, the parties agreed to the Court's updated construction based on arguments made for Term 13A: "Plain and ordinary meaning. Insofar as a definition is needed: Automatic conversion of at least a portion of the numerical values, contained in at least one of two markup documents, using one or more attributes (such as unit, magnitude, modifier, scale, measure, and adjustment) and one or more conversion factors to one common unit of measure of numerical values." Tr. at 177:10–23 ("[PLAINTIFFS]: That sounded correct . . . . [THE GOVERNMENT]: We agree."). Accordingly, the Court incorporates by reference the analysis of disputed claim term 13A and construes this term consistently with the construction of term 13A. Tr. at 177:10–23.

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Automatically converting at least a portion of the first or second numerical values and one or more attributes for the numerical values in the first or second markup document to create new numerical values and common attributes reflecting a unit of measure for the numerical values	Plain and ordinary (incorporating the parties' agreed construction of "markup document" as "a document that contains markup language tags.")
Court's Final Construction	
Plain and ordinary meaning. Insofar as a definition is needed: **Automatic conversion of at least a portion of the numerical values, contained in at least one of two markup documents, using one or more attributes (such as unit, magnitude, modifier, scale, measure, and adjustment) and one or more conversion factors to one common unit of measure of numerical values.**	

XXVII. Disputed Claim Term #14: "transform the series of numerical values into a new representation of the series of numerical values"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Converting the series of one or more numerical values and one or more of the attributes for the numerical values into a new series of one or more numerical values and one or more attributes that reflects the operation	Plain and ordinary meaning

Plaintiffs dispute the construction of this claim term in claims 1, 27, 28, and 54 of the '355 Patent. RJCCS at 5.

The following claim limitation highlights selected usage of the term in context:

performing an operation defined by the macro on the series of numerical values to *transform the series of numerical values into a new representation of the series of numerical values* based on the tags . . . .

'355 Patent col. 56 ll. 42–45.

A.   **Parties' Arguments**

Plaintiffs cite the specification to support their argument the attributes are transformed as well as the numerical values. Pls.' Cl. Constr. Br. at 15–16 (citing '355 Patent col. 4 ll. 6–30). The government raises the same singular versus plural attributes issue discussed *supra* for other terms. Def.'s Resp. Cl. Constr. Br. at 15 ("e-Numerate's construction requires that both the original series of numerical values and the transformed series of numerical values both have attributes. As discussed in the context of Term 1, the series of numerical values may have a

single attribute (and still meet the requirements directed to characteristics).") (emphasis omitted). Further, the government objects to the phrase "that reflects the operation" in plaintiffs' proposed construction "when 'the operation' is not even part of the term e-Numerate seeks to construe" and such a limitation is not supported by the claim language or specification. *Id.* at 15–16. Plaintiffs reply by quoting a limitation from claim 1 of the '355 Patent, which includes both "operation" and the claim term: "performing an operation defined by the macro on the series of numerical values to transform the series of numerical values into a new representation of the series of numerical values based on the tags." Pls.' Reply Cl. Constr. Br. at 6 (citing '355 Patent col. 56 ll. 42–45). The government argues "reflects" is inappropriate and leads to ambiguity. Def.'s Surreply Cl. Const. Br. at 6.

B. Analysis

1. The Court's Preliminary Construction

Before the *Markman* hearing, the Court considered the parties' claim construction briefs and all referenced materials in full in reaching a preliminary construction for this disputed term. The Court looked to the specification for explanation of the transformation process. As Figure 10, *see supra* Section XXIV.B.1, and its explanation in the specification show, transformation involves applying "conversion factors." '355 Patent fig.10, col. 26 ll. 16–35. Substituting "convert" for "transform" based on this explanation and using plain meaning for the rest of the claim term, the Court accordingly adopted the following preliminary construction: "Convert the series of numerical values into a new representation of the series of numerical values."

2. The Court's Final Construction

At the *Markman* hearing, the Court provided the parties with the Court's preliminary construction. Tr. at 177:24–178:4. Plaintiffs disputed whether the transformation of this claim term changes the attributes as well as the numerical values. Tr. at 178:12–186:18 ("[PLAINTIFFS]: . . . [W]e think that this should also mention changing not just the numbers, but the attributes as well."). The issue, however, is a dispute over the functionality of the claim language following this term—"values based on the tags"—and whether those tags are pre- or post-transformation. *See* Tr. at 186:19–22 ("THE COURT: . . . [I]t seems to me that this is a functionality issue, but it's based off of language that's outside the claim term. It's based on 'values based on the tags' that comes afterwards."), 187:9–13 ("[PLAINTIFFS]: I understand that ['based on the tags' is] not in the term. We probably should have put in 'based on the tags' in the provision that was being advocated for construction here because we think it's understood that that's what the claim is saying."). As "values based on the tags" is not part of the term proposed for construction, the Court does not rule on the parties' functionality dispute, and the parties may raise this issue again in future briefing if appropriate. The Court accordingly adopts its preliminary construction as final: "Convert the series of numerical values into a new representation of the series of numerical values." *See DeMarini Sports, Inc. v. Worth, Inc.*, 239 F.3d 1314, 1327 (Fed. Cir. 2001) ("We note that claim terms are not construed in a vacuum. Rather, to interpret claim terms we look to all of the intrinsic evidence as it pertains to the terms in question.").

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Converting the series of one or more numerical values and one or more of the attributes for the numerical values into a new series of one or more numerical values and one or more attributes that reflects the operation	Plain and ordinary meaning
Court's Preliminary Construction	
Convert the series of numerical values into a new representation of the series of numerical values.	

XXVIII. Disputed Claim Term #15A: "multiple hierarchical relationships between two line items"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
e-Numerate has identified a phrase that includes "capable of including" in addition to this language and has provided a construction therefore.	At least two relationships between two line items where one relationship is expressed as a parent-child relationship between the two line items and the other is based on a common ancestor between the two line items (incorporating parties' agreed construction of "line items")

The government disputes the construction of this claim term in claim 1 of the '748 Patent. RJCCS at 51–53.

The following claim limitation highlights selected usage of the term in context:

> a plurality of computer-readable semantic tags that describe a semantic meaning of the data values and are each computer-readably coupled to at least one of the data values, where the at least one computer-readable XML-compliant data document is capable of including *multiple hierarchical relationships between two line items* . . . .

'748 Patent col. 141 ll. 11–18.

A. Parties' Arguments

Plaintiffs argue their construction "embraces the conventional hierarchical tree structures described and shown in the '383 patent." [15] Pls.' Cl. Constr. Br. at 29–30 (citing '383 Patent col. 41 ll. 35–47, col. 27 ll. 25–49, fig.14A). The government's construction, plaintiffs assert, "is confusing, non-sensical, and appears to be designed to exclude conventional hierarchical tree

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[15] The parties briefed the terms by patent in chronological order and therefore provided their relevant arguments under related term 15B from the '383 Patent. As the asserted patents in the '355 series all have similar specifications, *see supra* note 9, the Court accepts the arguments regarding the familial specification.

structures such as that shown in at least Figure 14A." *Id.* at 31. The government contends the asserted patents describe "intersecting hierarchies structures" and distinguish them from "conventional tree structures." Def.'s Resp. Cl. Constr. Br. at 29–30. The specification's statement "the relationship attribute specifies the nature of the relationship, such as whether the line item is a child of another line item or contained by another," '383 Patent col. 27 ll. 42–44, "points to the presence of an additional relationship" which moves beyond the conventional tree structure, the government argues, allowing for multiple, overlapping hierarchies. Def.'s Resp. Cl. Constr. Br. at 30–31. The government also asserts multiple hierarchies would arise if a parent line item had some children with the child attribute and others with the member attribute. *Id.* at 31. Further, "it is unclear what are all the relevant line items and hierarchies that undergird [plaintiffs'] exemplary view" in Figure 14A, the government states. *Id.* at 32. Plaintiffs reply the government ignores the explanation of Figure 14A in the specification in describing plaintiffs' understanding of the figure as "unclear." Pls.' Reply Cl. Constr. Br. at 14 (citing '383 Patent col. 41 ll. 35–46).

The government also contends the idea of overlapping hierarchies was known in the art and appears in the prosecution history of the '383 Patent. Def.'s Resp. Cl. Constr. Br. at 32–34 (citing U.S. Patent No. 5,940,822; U.S. Patent Application No. 60/219,796; Def.'s Resp. Cl. Constr. Br. Ex. D ("2007-3-26 Amendment to Claims (10/052,250 Appl.)"), ECF No. 82-4; Def.'s Resp. Cl. Constr. Br. Ex. E ("2009-1-22 Reply Brief from '250 App."), ECF No. 82-5). Plaintiffs assert the government's argument based on prosecution history is inapposite because the referenced claim recites a "second hierarchy" that is "not present in the claim at issue." Pls.' Cl. Constr. Br. at 32. Further, plaintiffs point out the claim the government references from the prosecution history was canceled and the application eventually became the '842 Patent, which issued after the '383 Patent. Pls.' Reply Cl. Constr. Br. at 15. Finally, plaintiffs object to the government using its expert declaration to support its proposed construction. Pls.' Cl. Constr. Br. at 32.

B. Analysis

1. The Court's Preliminary Construction

Before the *Markman* hearing, the Court considered the parties' claim construction briefs and all referenced materials in full in reaching a preliminary construction for this disputed term. Looking first to the plain language of the term, the Court found it supported two potential constructions based on how the phrase is parsed: line item A has at least two different relationships (with line items B, C, etc.); or line item A has at least two relationships (both with line item B). *See* '748 Patent col. 141 ll. 11–18 ("multiple hierarchical relationships between two line items"). The Court then looked to the specification for support. Figure 14A, reproduced below, contains a tree view.
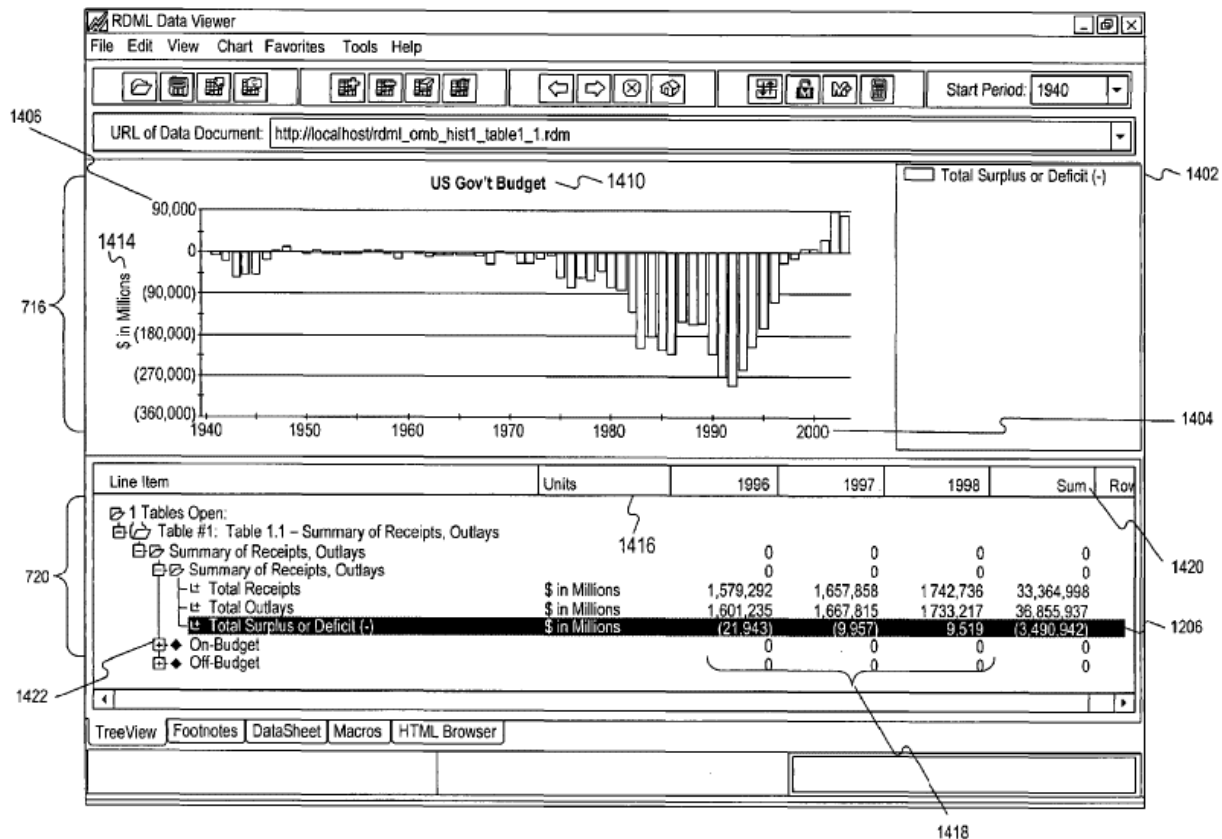
'748 Patent fig.14A.

"FIGS. 14A-F depict . . . the tree view 720 in the lower half." *Id.* col. 34 ll. 21–22. "The tree view presents a hierarchical view of the data. . . . The user can see the dependency relationships, identify from icons and visual cues how the different line items are related to their parents, peers, and children." *Id.* col. 41 ll. 2–10. The specification also states "[t]he data viewer 100 uses the level attribute and the relationship attribute to create a hierarchical tree" and discusses how the level attribute and relationship attribute affect a line item's relationship to another line item. *Id.* col. 26 l. 56–col. 27 l. 13. Figure 14A and the specification indicate the patents teach a conventional tree structure rather than the intersecting hierarchies the government proposes. *See id.* fig.14A, col. 41 ll. 2–10, col. 26 l. 56–col. 27 l. 13. The Court therefore preliminarily found the first potential construction—line item A has at least two different relationships (with line items B, C, etc.)—appropriate.

The Court also examined the prosecution history cited by the government. The specific claim the government cites was canceled on 21 December 2015, and the applicant added a new claim set with none of the same claim language to the application for the '842 Patent. *See* 2007-3-26 Amendment to the Claims (10/052,250 Appl.) at 15 ("62. . . . provides for the creation of a second hierarchy . . . ."); 21 Dec. 2015 Amendment to Claims (10/052,250 Appl.) at 1 ("1.-85. (Cancelled)"). The prosecution history cited by the government is therefore misleading and not persuasive on the Court. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1317 (Fed. Cir. 2005) ("Yet because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes."); *see also Mass. Inst. of*

Tech. v. Shire Pharm., Inc., 839 F.3d 1111, 1120 (Fed. Cir. 2016) (finding unpersuasive prosecution history arguments based on statements "made in the context of different claims that did not include the terms" for construction).

The Court adopted the following preliminary construction: "A line item with more than one type of hierarchical relationship with another line item, conveying information such as dependency on other line items and relation of different line items to their parents, peers, and children. Examples of relationships between two line items include parent-child, siblings, and grandparent-grandchild."

2. The Court's Final Construction

At the *Markman* hearing, the Court provided the parties with the Court's preliminary construction. Tr. at 189:6–13. In supplemental briefing following the *Markman* hearing, plaintiffs emphasized the importance of the construction encompassing Figures 14A of the '383 and '748 Patents and Figure 15 of the '842 Patent because they "are the only embodiments of financial reports contained in the specifications of the patents-in-suit." Pls.' Suppl. Cl. Constr. Br. at 2 (citing '355 Patent col. 49 ll. 51–57 ("RDML permits records to be arranged hierarchically within a table. Although not a standard approach for relational tables, this permits multiple levels of information to be placed in a single two-dimensional table. Users desire this, for example, when viewing financial statements, where a single line item 55 (e.g., 'Equipment leasing') may have several sub-components ('Autos,' 'Trucks,' 'Office Equipment.')")) (emphasis omitted), col. 9 ll. 44–52, col. 11 ll. 38–48, col. 23 ll. 33–50, col. 27 l. 67–col. 28 l. 6). Plaintiffs also described their understanding of the "multiple hierarchical relationships" in the figures: "[I]n Figure 14A of the '383 patent, 'Total Receipts' is a sibling [of] 'Total Outlays' and a child of 'Summary of Receipts, Outlays.' In Figure 15 of the '842 patent, 'Cash and Balances Due From Depository Institutions' is a sibling of 'Interest Bearing Balances' and a child of 'Total Assets.'" *Id.* at 3–4. The government's construction, plaintiffs assert, "improperly attempts to add the words 'with each other' into the claim." *Id.* at 4.

The central issue for this term is whether the construction must encompass Figures 14A of the '383 and '748 Patents and Figure 15 of the '842 Patent. "A claim construction that excludes the preferred embodiment 'is rarely, if ever, correct and would require highly persuasive evidentiary support.'" *Adams Respiratory Therapeutics, Inc. v. Perrigo Co.*, 616 F.3d 1283, 1290 (Fed. Cir. 2010) (quoting *Vitronics Corp. v. Conceptronic Inc.*, 90 F.3d 1576, 1583–84 (Fed. Cir. 1996)). The Federal Circuit "normally do[es] not interpret claim terms in a way that excludes embodiments disclosed in the specification." *Oatey Co. v. IPS Corp.*, 514 F.3d 1271, 1276–77 (Fed. Cir. 2008) (citing *Verizon Servs. Corp. v. Vonage Holdings Corp.*, 503 F.3d 1295, 1305 (Fed. Cir. 2007) (rejecting proposed claim interpretation that would exclude disclosed examples in the specification); *Invitrogen Corp. v. Biocrest Mfg., L.P.*, 327 F.3d 1364, 1369 (Fed. Cir. 2003) (finding district court's claim construction erroneously excluded an embodiment described in an example in the specification, where the prosecution history showed no such disavowal of claim scope)); *see also Nobel Biocare Servs. AG v. Instradent USA, Inc.*, 903 F.3d 1365, 1382 (Fed. Cir. 2018) ("there is a strong presumption against a claim construction that excludes a disclosed embodiment") (quoting *In re Katz Interactive Call Processing Patent Litig.*, 639 F.3d 1303, 1324 (Fed. Cir. 2011)). As a threshold matter, the

government agrees the Court can look to the specification in the case of ambiguous language. Tr. at 213:4–8 ("THE COURT: . . . [I]f the claim language is for some reason ambiguous on what is or is not included, then we can look to the specification in order to understand what it means? [THE GOVERNMENT]: Sure."). The specification discusses Figure 14A as representing the hierarchical relationships of the claimed invention. '748 Patent col. 41 ll. 2–10; *see supra* Section XXVIII.B.1. Prosecution history arguments based on a canceled claim set and extrinsic references to what was known in the art do not reach the level of "highly persuasive evidentiary support" required for the Court to construe the term to exclude the embodiment disclosed in Figure 14A. *Vitronics*, 90 F.3d at 1583–84.

At the *Markman* hearing, plaintiffs suggested several language changes to the Court's preliminary construction to clarify the multiple relationships do not have to be between the same two line items. First, plaintiffs suggested "relationships to other line items" rather than "relationship with another line item" because "another line item" implies only one other line item is the subject of both relationships. Tr. at 204:12–25. Second, plaintiffs suggested changing "with more than one type" to "in various types." *Id.* Finally, plaintiffs suggested omitting the clause in the first sentence of the Court's preliminary construction beginning with "conveying" as it is unnecessary. Tr. at 206:5–9. The government objected to these changes and argued for retaining the first clause of the Court's preliminary construction—"A line item with more than one type of hierarchical relationship with another line item"—to indicate multiple relationships between the same two line items are required. *See* Tr. at 206:17–208:3, 209:7–16. The Court, however, finds plaintiffs' suggested changes helpful in clarifying the Court's intended meaning as well as supported by the specification. The Court, therefore, alters the first sentence of its preliminary construction to read: "A line item in various types of hierarchical relationships with other line items."

The parties agreed on two changes to the last sentence of the Court's preliminary construction to clarify the exemplary relationships. Instead of "siblings," the parties agreed to "sibling-sibling." Tr. at 206:11–14 (the government), 207:24–208:2 (plaintiffs). The parties also agreed to add "member-collection." Tr. at 206:15–17 (the government), 207:18–23 (plaintiffs). The Court accordingly alters the last sentence of its preliminary construction to read: "Examples of relationships between two line items include parent-child, sibling-sibling, grandparent-grandchild, and member-collection." With these changes, plaintiffs agreed to the Court's construction in full. *See* Tr. at 208:15–21 (plaintiffs agreeing to first sentence of construction), 208:25–209:4 (plaintiffs agreeing to second sentence of construction).

Implementing modifications based on clarity, the specification evidence, and agreement between the parties, the Court alters its preliminary construction and adopts the following final construction: "A line item in various types of hierarchical relationships with other line items. Examples of relationships between two line items include parent-child, sibling-sibling, grandparent-grandchild, and member-collection." *See Adams Respiratory Therapeutics*, 616 F.3d at 1290 (quoting *Vitronics*, 90 F.3d at 1583–84); *Oatey*, 514 F.3d at 1276–77 (citing *Verizon Servs.*, 503 F.3d at 1305; *Invitrogen*, 327 F.3d at 1369); *Nobel Biocare Servs. AG*, 903 F.3d at 1382 (quoting *In re Katz Interactive Call Processing Patent Litig.*, 639 F.3d at 1324).

Plaintiffs' Proposed Construction	Defendant's Proposed Construction

	At least two relationships between two line items where one relationship is expressed as a parent-child relationship between the two line items and the other is based on a common ancestor between the two line items
e-Numerate has identified a phrase that includes "capable of including" in addition to this language and has provided a construction therefore.	(incorporating parties' agreed construction of "line items")
Court's Final Construction	
A line item in various types of hierarchical relationships with other line items. Examples of relationships between two line items include parent-child, sibling-sibling, grandparent-grandchild, and member-collection.	

XXIX. Disputed Claim Term #15B: "multiple hierarchical relationships between two line items of corresponding numerical values"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
As used in claims 7 and 15, Plaintiffs contend that the phrase should contain the word "includes" before "multiple" and should be construed as "includes a line item in various types of hierarchical relationships with other line items. By way of example, parent-child, siblings, grandparent-grandchild, etc." Claim 8 uses the term "capable of". e-Numerate has previously provided a construction for the phrase including "capable of."	"at least two relationships between two line items of corresponding numerical values where one relationship is expressed as a parent-child relationship between the two line items and the other is based on a common ancestor between the two line items"

(incorporating above construction of "line items") |

Plaintiffs dispute the construction of this claim term in claims 7, 8, and 15 of the '383 Patent. RJCCS at 32–34.

The following claim limitation highlights selected usage of the term in context:

The computer program product is configured such that the single markup document includes a XML-compliant data document that includes *multiple hierarchical relationships between two line items of corresponding numerical values* . . . .

'383 Patent col. 143 ll. 63–67.

A. Parties' Arguments

In the briefs, the parties argued the constructions of terms 15A and 15B together, presenting no arguments unique to this term. *See* Pls.' Cl. Constr. Br. at 44; Def.'s Resp. Cl. Constr. Br. at 45; Pls.' Reply Cl. Constr. Br. at 21; Def.'s Surreply Cl. Constr. Br. at 19; Pls.' Suppl. Cl. Constr. Br. at 1–4. As such, the Court refers to the parties' arguments section of disputed term 15A, *supra* Section XXVIII.A, in construing this term.

B.   Analysis

At the *Markman* hearing, the parties agreed the Court's construction of disputed claim term 15A should apply to the constructions of terms 15B–15C. Tr. at 189:19–190:2. Accordingly, as agreed by the parties, the Court incorporates by reference the analysis of disputed claim term 15A and construes this term consistently with the construction of term 15A. Tr. at 189:19–190:2.

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
As used in claims 7 and 15, Plaintiffs contend that the phrase should contain the word "includes" before "multiple" and should be construed as "includes a line item in various types of hierarchical relationships with other line items. By way of example, parent-child, siblings, grandparent-grandchild, etc." Claim 8 uses the term "capable of". e-Numerate has previously provided a construction for the phrase including "capable of."	"at least two relationships between two line items of corresponding numerical values where one relationship is expressed as a parent-child relationship between the two line items and the other is based on a common ancestor between the two line items" (incorporating above construction of "line items")
Court's Final Construction	
A line item in various types of hierarchical relationships with other line items. Examples of relationships between two line items include parent-child, sibling-sibling, grandparent-grandchild, and member-collection.	

XXX. Disputed Claim Term #15C: "multiple hierarchical relationships between two of the plurality of line items"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Plaintiffs have proposed a construction of this phrase including the words "capable of including". Plaintiffs incorporate that construction by reference.	At least two relationships between two line items where one relationship is expressed as a parent-child relationship between the two line items and the other is based on a common ancestor between the two line items. (incorporating above construction of "line items")

Plaintiffs dispute the construction of this claim term in claim 29 of the '842 Patent. RJCCS at 68–70.

The following claim limitation highlights selected usage of the term in context:

a plurality of computer-readable semantic tags that describe a semantic meaning of the data values, where the at least one computer-readable XML-compliant data document is capable of including *multiple hierarchical relationships between two*

of the plurality of line items . . . .

'842 Patent col. 83 ll. 40–45.

A. Parties' Arguments

In the briefs, the parties argued the constructions of terms 15A and 15C together, presenting no arguments unique to this term. *See* Pls.' Cl. Constr. Br. at 40; Def.'s Resp. Cl. Constr. Br. at 41; Pls.' Reply Cl. Constr. Br. at 19; Def.'s Surreply Cl. Constr. Br. at 19; Pls.' Suppl. Cl. Constr. Br. at 1–4. As such, the Court refers to the parties' arguments section of disputed term 15A, *supra* Section XXVIII.A, in construing this term.

B. Analysis

At the *Markman* hearing, the parties agreed the Court's construction of disputed claim term 15A should apply to the constructions of terms 15B–15C. Tr. at 189:19–190:2. Accordingly, as agreed by the parties, the Court incorporates by reference the analysis of disputed claim term 15A and construes this term consistently with the construction of term 15A. Tr. at 189:19–190:2.

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Plaintiffs have proposed a construction of this phrase including the words "capable of including". Plaintiffs incorporate that construction by reference.	At least two relationships between two line items where one relationship is expressed as a parent-child relationship between the two line items and the other is based on a common ancestor between the two line items. (incorporating above construction of "line items")
Court's Final Construction	
A line item in various types of hierarchical relationships with other line items. Examples of relationships between two line items include parent-child, sibling-sibling, grandparent-grandchild, and member-collection.	

XXXI. Disputed Claim Term #16A: "capable of including multiple hierarchical relationships between two line items"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
May include a line item in various types of hierarchical relationships with other line items. By way of example, parent-child, siblings, grandparent-grandchild, etc.	Has the ability to include at least two relationships between two line items where one relationship is expressed as a parent-child relationship between the two line items and the other is based on a common ancestor between the two line items (incorporating parties' agreed construction of

	"line items")

Plaintiffs dispute the construction of this claim term in claim 1 of the '748 Patent. RJCCS at 50–51.

The following claim limitation highlights selected usage of the term in context:

> a plurality of computer-readable semantic tags that describe a semantic meaning of the data values and are each computer-readably coupled to at least one of the data values, where the at least one computer-readable XML-compliant data document is *capable of including multiple hierarchical relationships between two line items . . . .*

'748 Patent col. 141 ll. 11–18.

A.   Parties' Arguments

Plaintiffs argue their proposed construction of "may include" accords with Federal Circuit precedent on the construction of "capable of including." Pls.' Cl. Constr. Br. at 25–26 (citing *Finjan, Inc. v. Secure Computing Corp.*, 626 F.3d 1197 (Fed. Cir. 2010), *Intel Corp. v. U.S. Int'l Trade Comm'n*, 946 F.2d 821, 832 (Fed. Cir. 1991)). The government asserts under plaintiffs' proposed construction of "capable of including," "the resulting claim may both include or not include the relevant functionality—as opposed to always allowing for the relevant functionality."[16] Def.'s Resp. Cl. Constr. Br. at 25. A PHOSITA, the government argues, would understand the plain and ordinary meaning of "capable of including" to be "has the ability to include." *Id.* at 24.

B.   Analysis

1.   The Court's Preliminary Construction

Before the *Markman* hearing, the Court considered the parties' claim construction briefs and all referenced materials in full in reaching a preliminary construction for this disputed term. The Court looked to Federal Circuit caselaw on the meaning of "capable." Although the procedural posture relates to infringement rather than claim construction, the Federal Circuit stated in *Finjan*, "[T]o infringe a claim that recites capability and not actual operation, an accused device 'need only be capable of operating' in the described mode." 626 F.3d at 1204 (quoting *Intel*, 946 F.2d at 832); *see also Revolution Eyewear, Inc. v. Aspex Eyewear, Inc.*, 563 F.3d 1358, 1369–70 (Fed. Cir. 2009) (finding a claim only required "capacity to perform a function: 'capable of engaging'"). Similarly, the Circuit found in *Hilgraeve Corp. v. Symantec Corp.* "an accused device may be found to infringe if it is reasonably capable of satisfying the claim limitations, even though it may also be capable of non-infringing modes of operation." 265 F.3d 1336, 1343 (Fed. Cir. 2001). These statements on capability support the government's

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[16] The government also raises an indefiniteness issue with plaintiffs' proposed construction. Def.'s Resp. Cl. Constr. Br. at 24–25. The Court does not address the indefiniteness argument at this time as it construes disputed terms not implicating indefiniteness in this Opinion and Order.

position on the meaning of "capable," pointing to a latent ability rather than a potential ability as plaintiffs propose with their construction of "may." The Court found no reason to expand the plain and ordinary meaning of "capable" by construing it using the broader "may" but found the words "has the ability to" conveyed the plain and ordinary meaning of "capable." The Court accordingly adopted the following preliminary construction: "Plain and ordinary meaning. Insofar as a definition is needed: Capable of including (or have the ability to include) multiple hierarchical relationships between two line items."

2. The Court's Final Construction

At the *Markman* hearing, the Court provided the parties with the Court's preliminary construction. Tr. at 213:16–20. The parties confirmed their only dispute for terms 16A–D relates to the construction of "capable of," Tr. at 214:2–6, and both agreed to the Court's preliminary construction, Tr. at 214:25–215:6. The Court accordingly adopts its preliminary construction as final: "Plain and ordinary meaning. Insofar as a definition is needed: Capable of including (or have the ability to include) multiple hierarchical relationships between two line items." *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *see also Finjan*, 626 F.3d at 1204 (quoting *Intel*, 946 F.2d at 832); *Hilgraeve*, 265 F.3d at 1343; *Revolution Eyewear*, 563 F.3d at 1369–70.

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
May include a line item in various types of hierarchical relationships with other line items. By way of example, parent-child, siblings, grandparent-grandchild, etc.	Has the ability to include at least two relationships between two line items where one relationship is expressed as a parent-child relationship between the two line items and the other is based on a common ancestor between the two line items (incorporating parties' agreed construction of "line items")
Court's Final Construction	
Plain and ordinary meaning. Insofar as a definition is needed: **Capable of including (or have the ability to include) multiple hierarchical relationships between two line items.**	

XXXII. Disputed Claim Term #16B: "capable of including multiple hierarchical relationships between two of the plurality of line items"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
May include a line item in various types of hierarchical relationships with other line items. By way of example, parent-child, siblings, grandparent-grandchild, etc.	Has the ability to include at least two relationships between two line items where one relationship is expressed as a parent-child relationship between the two line items and the other is based on a common ancestor

	between the two line items.

Plaintiffs dispute the construction of this claim term in claim 29 of the '842 Patent. RJCCS at 67–68.

The following claim limitation highlights selected usage of the term in context:

a plurality of computer-readable semantic tags that describe a semantic meaning of the data values, where the at least one computer-readable XML-compliant data document is *capable of including multiple hierarchical relationships between two of the plurality of line items . . . .*

'842 Patent col. 83 ll. 40–45.

A. Parties' Arguments

In the briefs, the parties argued the constructions of terms 16A and 16B together, presenting no arguments unique to this term. *See* Pls.' Cl. Constr. Br. at 40; Def.'s Resp. Cl. Constr. Br. at 41; Pls.' Reply Cl. Constr. Br. at 19; Def.'s Surreply Cl. Constr. Br. at 19. As such, the Court refers to the parties' arguments section of disputed term 16A, *supra* Section XXXI.A, in construing this term.

B. Analysis

At the *Markman* hearing, the parties agreed the Court's construction of disputed claim term 16A should apply to the constructions of terms 16B–16D. Tr. at 213:21–214:1. Accordingly, as agreed by the parties, the Court incorporates by reference the analysis of disputed claim term 16A and construes this term consistently with the construction of term 16A. Tr. at 213:21–214:1.

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
May include a line item in various types of hierarchical relationships with other line items. By way of example, parent-child, siblings, grandparent-grandchild, etc.	Has the ability to include at least two relationships between two line items where one relationship is expressed as a parent-child relationship between the two line items and the other is based on a common ancestor between the two line items.
Court's Final Construction	
Plain and ordinary meaning. Insofar as a definition is needed: **Capable of including (or having the ability to include) multiple hierarchical relationships between two of the plurality of line items.**	

XXXIII. Disputed Claim Term #16C: "capable of including at least one of: multiple hierarchical relationships between two line items of corresponding numerical values; or computer-readable semantic tags that each describe a semantic meaning of one or more of

corresponding numerical values"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Plaintiffs contend that "capable of including" should be construed as "may include." Plaintiffs have previously provided their constructions for the other phrases in this claim and incorporate those by reference.	Defendant maintains that "capable of including" has its plain and ordinary meaning of "has the ability to include." Defendant has provided constructions for other terms including "multiple hierarchical relationships between two line items of corresponding numerical values" and "semantic tags" and incorporates those herein. The remaining terms should be construed according to their plain and ordinary meaning.

Plaintiffs dispute the construction of this claim term in claim 8 of the '383 Patent. RJCCS at 28–29.

The following claim limitation highlights selected usage of the term in context:

wherein the computer program product is operable such that the single markup document includes a XML-compliant data document that is *capable of including at least one of: multiple hierarchical relationships between two line items of corresponding numerical values, or computer-readable semantic tags that each describe a semantic meaning of one or more of corresponding numerical values.*

'383 Patent col. 144 ll. 4–11.

A. Parties' Arguments

In the briefs, the parties argued the constructions of terms 16A and 16C together, presenting no arguments unique to this term. *See* Pls.' Cl. Constr. Br. at 37; Def.'s Resp. Cl. Constr. Br. at 39; Pls.' Reply Cl. Constr. Br. at 15; Def.'s Surreply Cl. Constr. Br. at 17. As such, the Court refers to the parties' arguments section of disputed term 16A, *supra* Section XXXI.A, in construing this term.

B. Analysis

At the *Markman* hearing, the parties agreed the Court's construction of disputed claim term 16A should apply to the constructions of terms 16B–16D. Tr. at 213:21–214:1. Accordingly, as agreed by the parties, the Court incorporates by reference the analysis of disputed claim term 16A and construes this term consistently with the construction of term 16A. Tr. at 213:21–214:1.

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Plaintiffs contend that "capable of including" should be construed as "may include."	Defendant maintains that "capable of including" has its plain and ordinary meaning

	of "has the ability to include." Defendant has provided constructions for other terms including "multiple hierarchical relationships between two line items of corresponding numerical values" and "semantic tags" and incorporates those herein. The remaining terms should be construed according to their plain and ordinary meaning.
Plaintiffs have previously provided their constructions for the other phrases in this claim and incorporate those by reference.	

Court's Final Construction
Plain and ordinary meaning. Insofar as a definition is needed: **Capable of including (or having the ability to include) multiple hierarchical relationships between two line items or computer-readable semantics tags that each describe a semantic meaning of one or more of corresponding numerical values.**

XXXIV. Disputed Claim Term #16D: "capable of including computer-readable semantic tags that each describe a semantic meaning of one or more of the corresponding values"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Plaintiffs contend that "capable of including" should be construed as "may include." e-Numerate has previously provided its constructions for the other phrases in this claim.	Defendant maintains that "capable of including" should have its plain and ordinary meaning of "has the ability to include." Defendant previously identified a construction for "semantic tags" and that term should be construed. The remaining verbiage in this term should be construed according to its plain and ordinary meaning.

Plaintiffs dispute the construction of this claim term in claim 15 of the '383 Patent. RJCCS at 34–36.

The following claim limitation highlights selected usage of the term in context:

wherein the computer program product is configured such that the single markup document includes a XML-compliant data document that includes multiple hierarchical relationships between two line items of corresponding numerical values, and is further *capable of including computer-readable semantic tags that each describe a semantic meaning of one or more of the corresponding numerical values . . . .*

'383 Patent col. 144 l. 61–col. 145 l. 1.

A.   **Parties' Arguments**

In the briefs, the parties argued the constructions of terms 16A and 16D together, presenting no arguments unique to this term. *See* Pls.' Cl. Constr. Br. at 32; Def.'s Resp. Cl.

Constr. Br. at 35; Pls.' Reply Cl. Constr. Br. at 15; Def.'s Surreply Cl. Constr. Br. at 17. As such, the Court refers to the parties' arguments section of disputed term 16A, *supra* Section XXXI.A, in construing this term.

B.   Analysis

At the *Markman* hearing, the parties agreed the Court's construction of disputed claim term 16A should apply to the constructions of terms 16B–16D. Tr. at 213:21–214:1. Accordingly, as agreed by the parties, the Court incorporates by reference the analysis of disputed claim term 16A and construes this term consistently with the construction of term 16A. Tr. at 213:21–214:1.

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Plaintiffs contend that "capable of including" should be construed as "may include." e-Numerate has previously provided its constructions for the other phrases in this claim.	Defendant maintains that "capable of including" should have its plain and ordinary meaning of "has the ability to include." Defendant previously identified a construction for "semantic tags" and that term should be construed. The remaining verbiage in this term should be construed according to its plain and ordinary meaning.
Court's Final Construction	
Plain and ordinary meaning. Insofar as a definition is needed: **Capable of including (or having the ability to include) computer-readable semantics tags that describe a semantic meaning of one or more of corresponding values.**	

XXXV. Disputed Claim Term #17: "generating at least one second title corresponding to results of the operation"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Plain and ordinary meaning	Generating at least one second title based on the results of the operation and the tags

The government disputes the construction of this claim term in claims 1 and 28 of the '355 Patent. RJCCS at 5.

The following claim limitation highlights selected usage of the term in context:

generating at least one first title corresponding to the series of numerical values; receiving a macro defined to perform an operation on the series of numerical values; performing an operation defined by the macro on the series of numerical values to transform the series of numerical values into a new representation of the series of numerical values based on the tags; *generating at least one second title corresponding to results of the operation*; and displaying the results of the operation and the at least one second title . . . .

'355 Patent col. 56 ll. 38–48.

A.   Parties' Arguments

Plaintiffs argue "this term should be given its plain and ordinary meaning." Pls.' Cl. Constr. Br at 16. Plaintiffs oppose the government's construction because it "simply restates the claim language and attaches the language 'and the tags' onto the claim language." *Id.* Plaintiffs contend "the Government's construction is also vague because it does not specify which tags are used to generate the second title (tags for the pre-transformed or post-transformed numbers)." *Id.* at 17. The government states "[t]he main issue with this term is whether e-Numerate is held to the disclosure of its patent or if it may leave open the possibility that it can later improperly expand the scope of this claim term (beyond what was intended in the intrinsic record)." Def.'s Resp. Cl. Constr. Br at 16. The government asserts its "proposed construction refers to the original (pre-transformation) tags and since those are the only tags recited in the claim, referring to them as 'the tags' is appropriate." *Id.*

B.   Analysis

1.   The Court's Preliminary Construction

Before the *Markman* hearing, the Court considered the parties' claim construction briefs and all referenced materials in full in reaching a preliminary construction for this disputed term. The Court looked to the plain and ordinary meaning of the term as well as prior claim limitations for clarity on "operation." Claim 1 specifies "an operation defined by the macro on the series of numerical values into a new representation of the series of numerical values *based on the tags*." '355 Patent col. 56 ll. 42–45 (emphasis added). The government's addition of "and the tags" is unnecessary because the "operation" is inherently based on the tags. *See id.* The Court offered clarification by incorporating claim language preceding the term which provides the "results of the operation"—"a new representation of the series of numerical values," *id.* col. 56 ll. 44–45—in the following preliminary construction: "Plain and ordinary meaning. Insofar as a definition is needed: Generating at least one second title corresponding to new representation of the series of numerical values from the results of the macro-defined transformation operation."

2.   The Court's Final Construction

At the *Markman* hearing, the Court provided the parties with the Court's preliminary construction. Tr. at 215:11–16. The parties agreed to the Court's preliminary construction. Tr. at 215:17–25. The Court accordingly adopts its preliminary construction as final: "Plain and ordinary meaning. Insofar as a definition is needed: Generating at least one second title corresponding to new representation of the series of numerical values from the results of the macro-defined transformation operation." Tr. at 215:17–25.

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
Plain and ordinary meaning	Generating at least one second title based on the results of the operation and the tags

Court's Final Construction
Plain and ordinary meaning. Insofar as a definition is needed: **Generating at least one second title corresponding to new representation of numerical values from the results of the macro-defined transformation operation.**

XXXVI. Conclusion

The disputed terms not implicating indefiniteness are interpreted by the Court in this Claim Construction Opinion and Order. The Court adopts the construction of the terms as set forth herein. The government **SHALL FILE** its supplemental brief of up to 20 pages regarding the indefiniteness terms and supplemental expert report **on or before 5 April 2023**; plaintiffs **SHALL FILE** their response of up to 20 pages **on or before 19 April 2023**.[17]

IT IS SO ORDERED.

s/ Ryan T. Holte
RYAN T. HOLTE
Judge

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[17] The parties agreed to the timeline and page limits for supplemental briefing at the *Markman* hearing. Tr. at 216:5–221:14.